

Figure 1 A

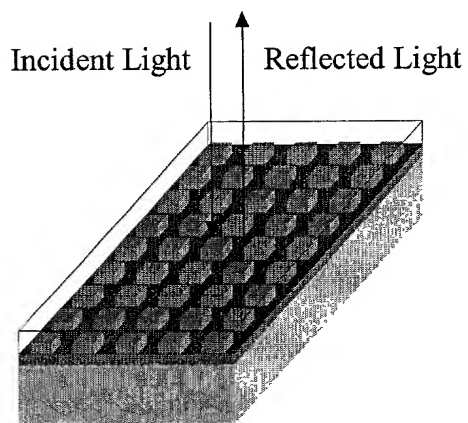
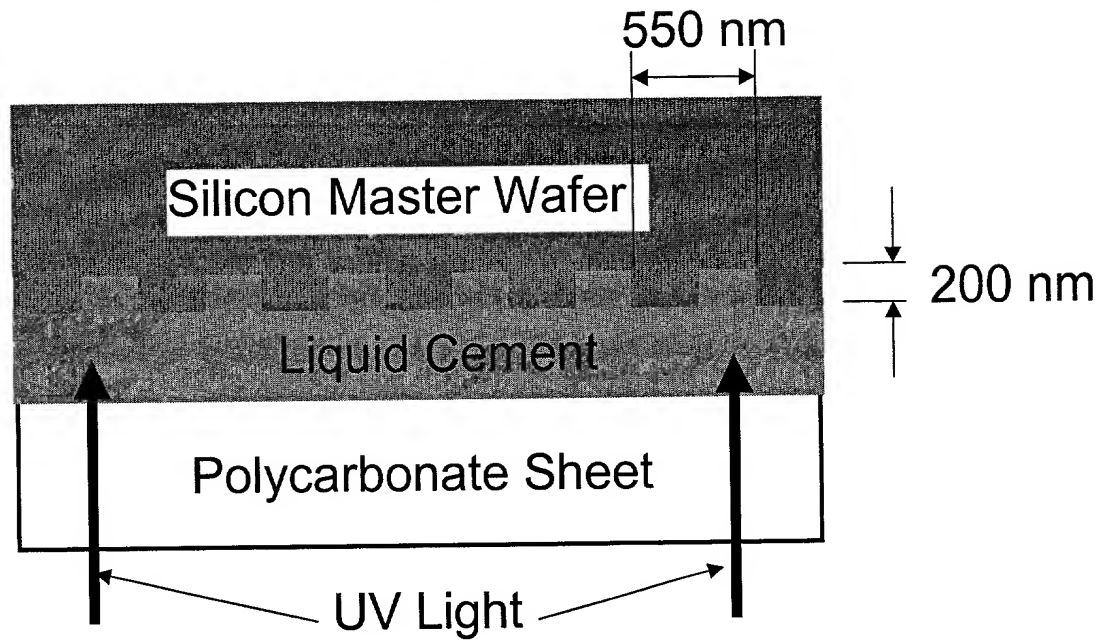
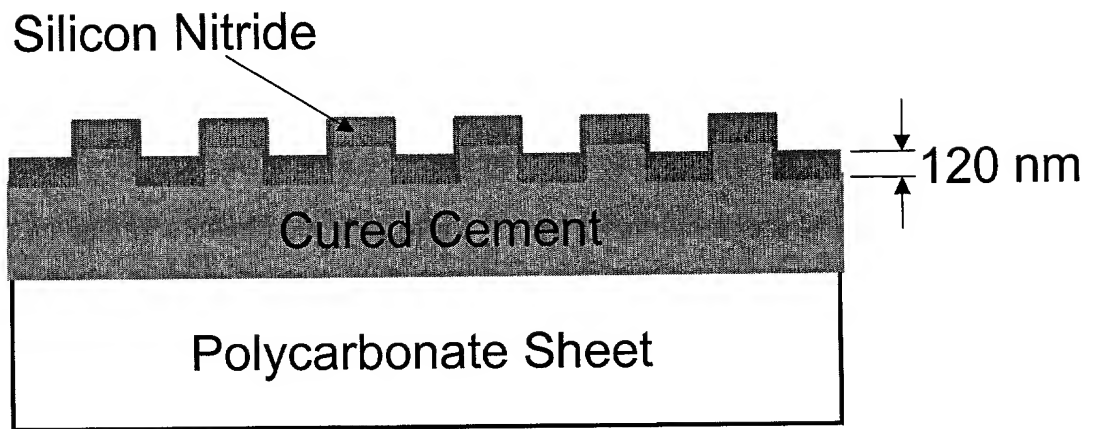
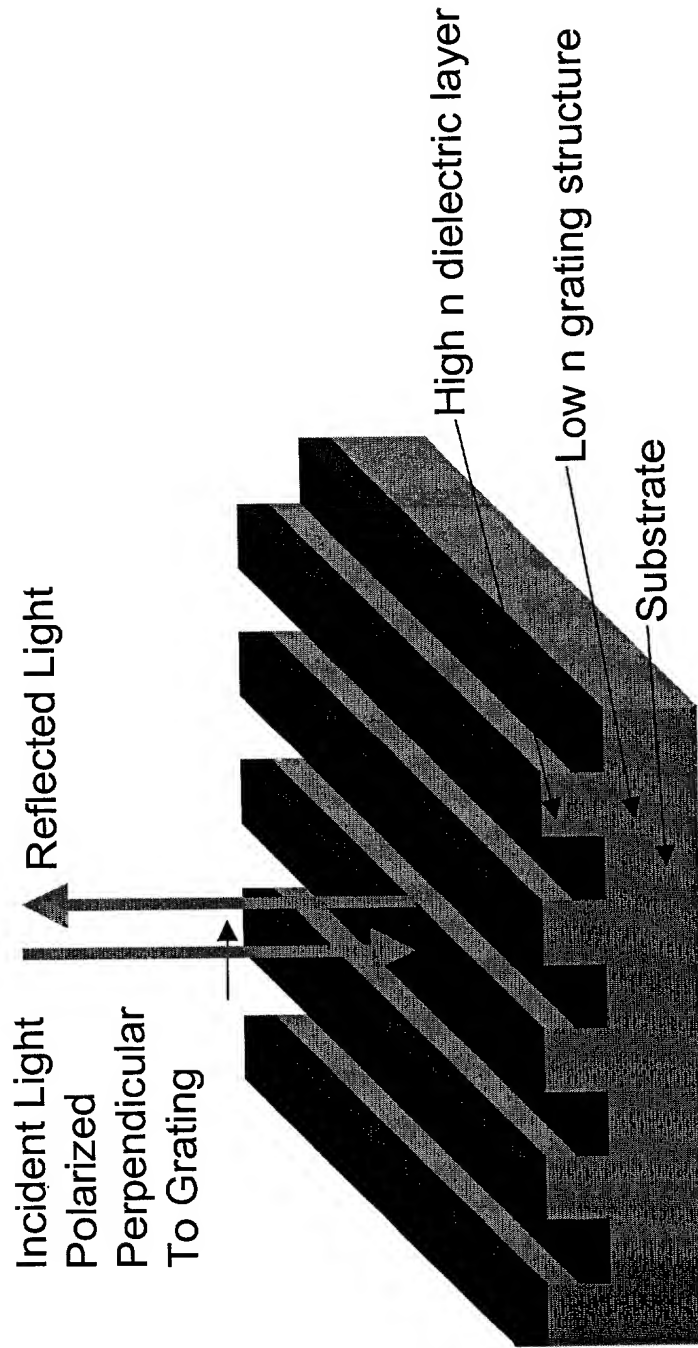


Figure 1 B

**Fig. 1C****Fig. 1D**



**Fig. 2**

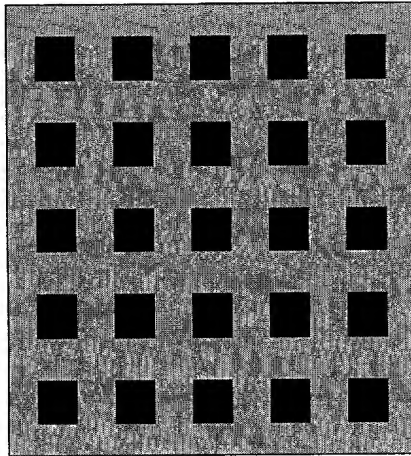


Figure 3A

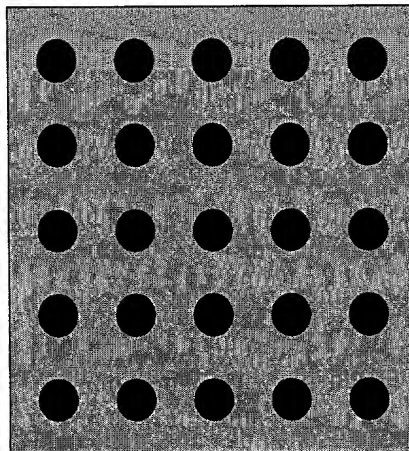


Figure 3B

2022-09-26 10:56:01

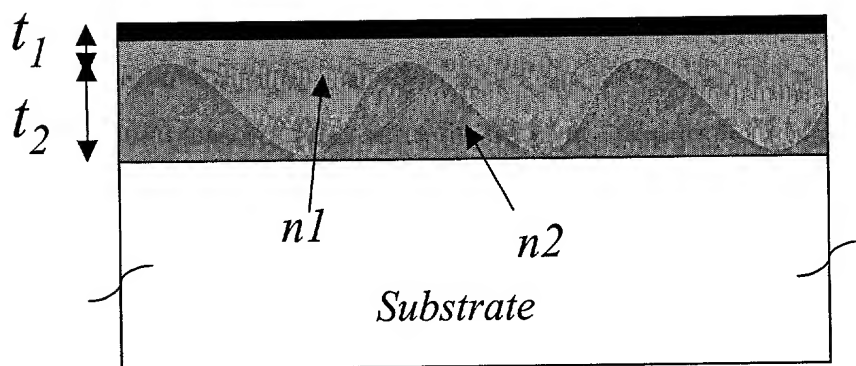


Figure 4

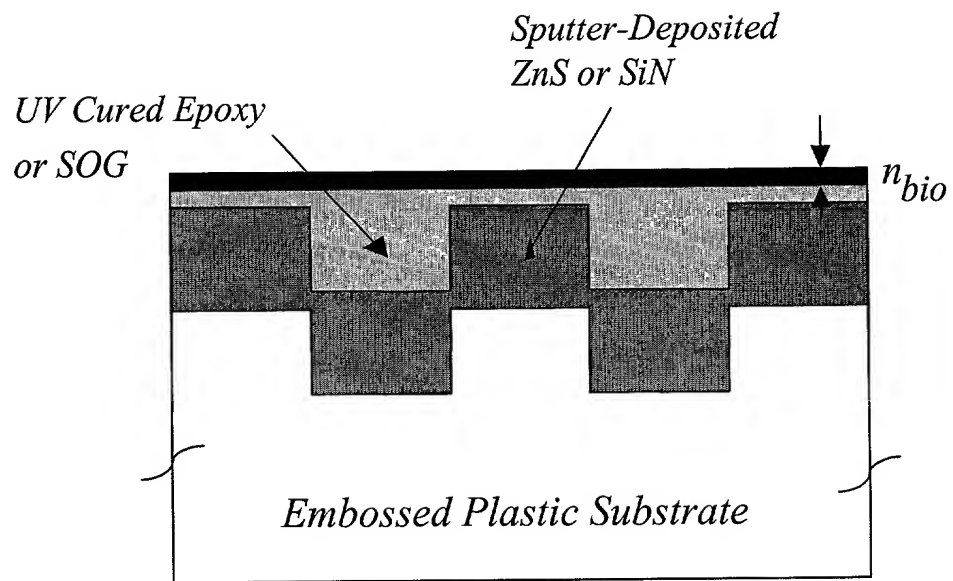


Figure 5

Amine	<ul style="list-style-type: none"> <li>➤ Sulfo-succinimidyl-6-(biotinamido)hexanoate (Sulfo-NHS-LC-Biotin) <ul style="list-style-type: none"> <li>• Streptavidin / avidin then biotinylated molecule</li> </ul> </li> <li>➤ N,N'-disuccinimidyl carbonate (DSC); • -NH<sub>2</sub>, non-cleavable</li> <li>➤ Dimethyl pimelimidate (DMP); • -NH<sub>2</sub>, non-cleavable</li> <li>➤ Dimethyl 3,3'-dithiobispropionimidate (DTBP); • -NH<sub>2</sub>, cleavable</li> <li>➤ 1-Ethyl-3-(3-Dimethylaminopropyl)carbodiimide Hydrochloride (EDC) and N-Hydroxysulfosuccinimide (Sulfo-NHS); • -COOH</li> <li>➤ Sulfo-succinimidyl 6-[α-methyl-α-(2-pyridyl-dithio)toluamido] hexanoate (Sulfo-LC-SMPT); • -SH, cleavable</li> <li>➤ N-(B-Maleimidopropoxy)succinimide ester (BMPS) <ul style="list-style-type: none"> <li>• -SH<sub>2</sub>, non-cleavable</li> </ul> </li> <li>➤ Sulfo-succinimidyl 4-[N-maleimidomethyl]cyclohexane-1-carboxylate (Sulfo-SMCC); • -SH, non-cleavable</li> </ul>
Aldehyde	<ul style="list-style-type: none"> <li>➤ Directly with aldehyde or first amino then aldehyde <ul style="list-style-type: none"> <li>• -NH<sub>2</sub></li> </ul> </li> </ul>
Ni(II)	<ul style="list-style-type: none"> <li>➤ Using Nitrilotriacetic acid (NTA) group, which forms a chelate with Ni(II) <ul style="list-style-type: none"> <li>• His-tagged molecules</li> </ul> </li> </ul>

Figure 6

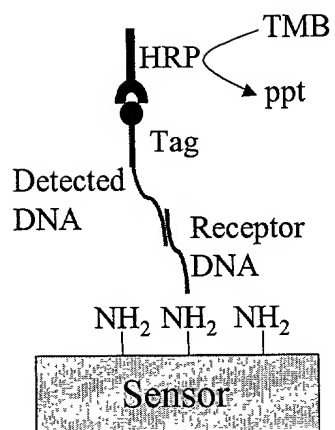


Figure 7A

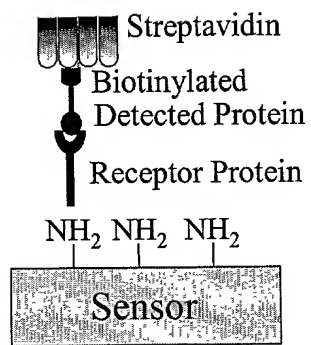


Figure 7B

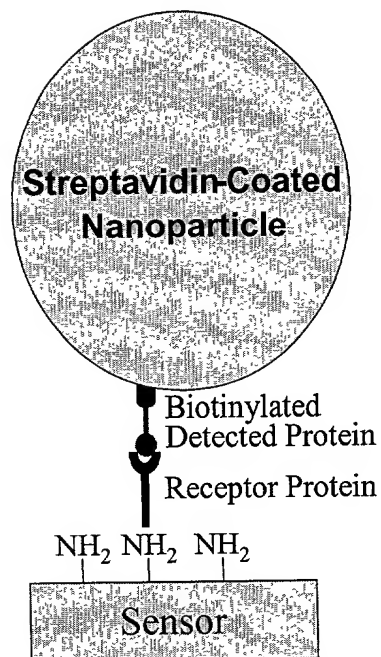


Figure 7C



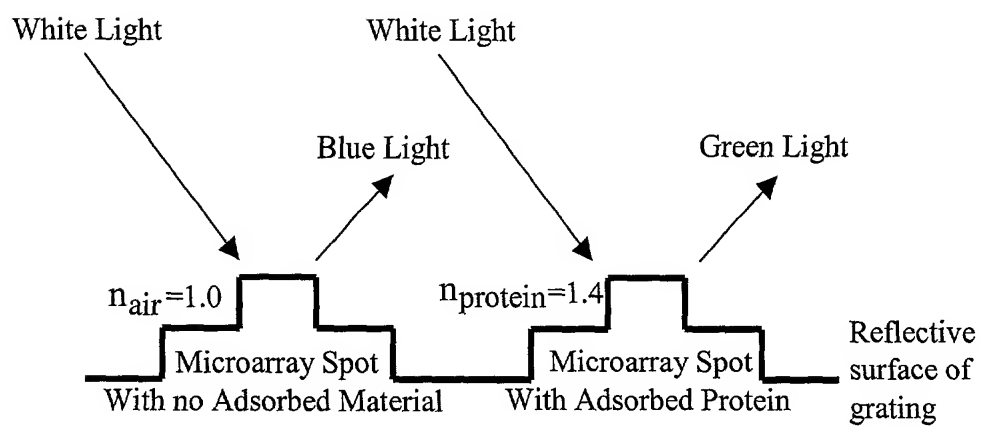


Figure 8

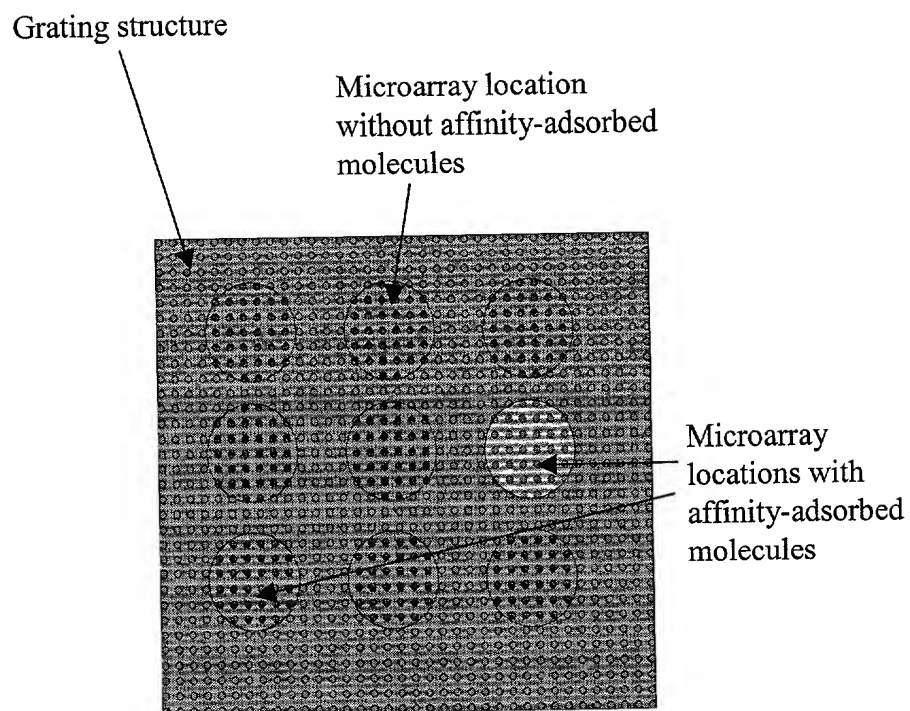


Figure 9

□ Microtiter plate

□ Microarray slide

Plastic bottomless microtiter plate.  
Holes in plate are open from top to bottom

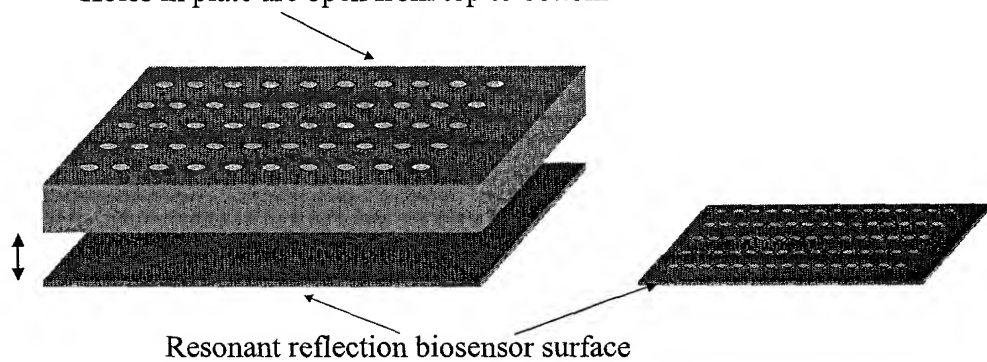


Figure 10A

Figure 10B

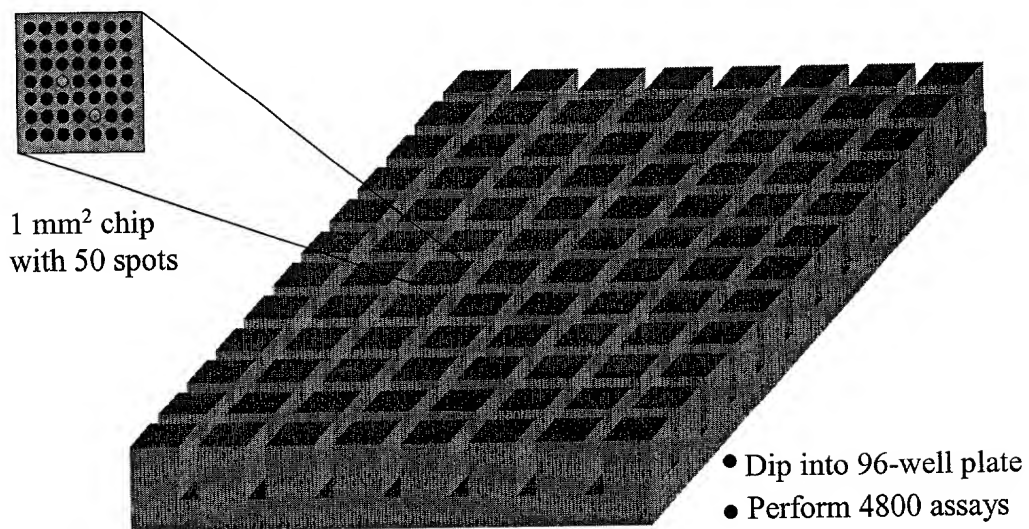


Figure 11

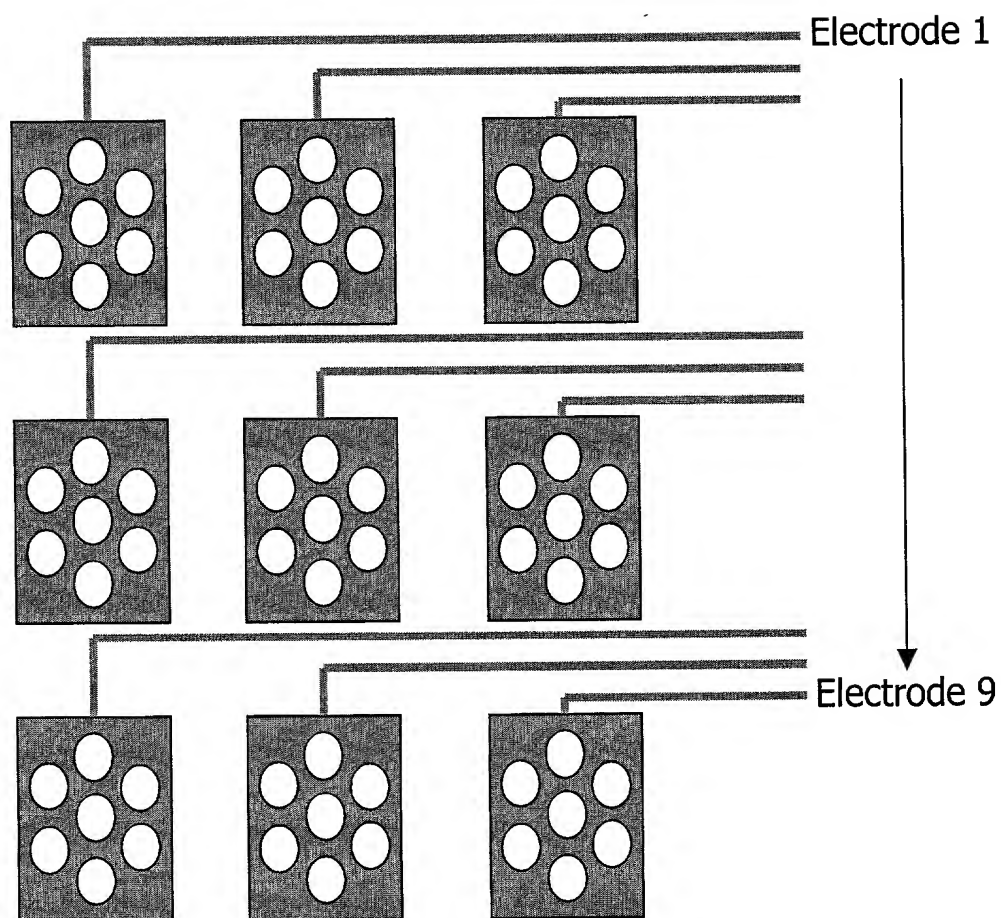
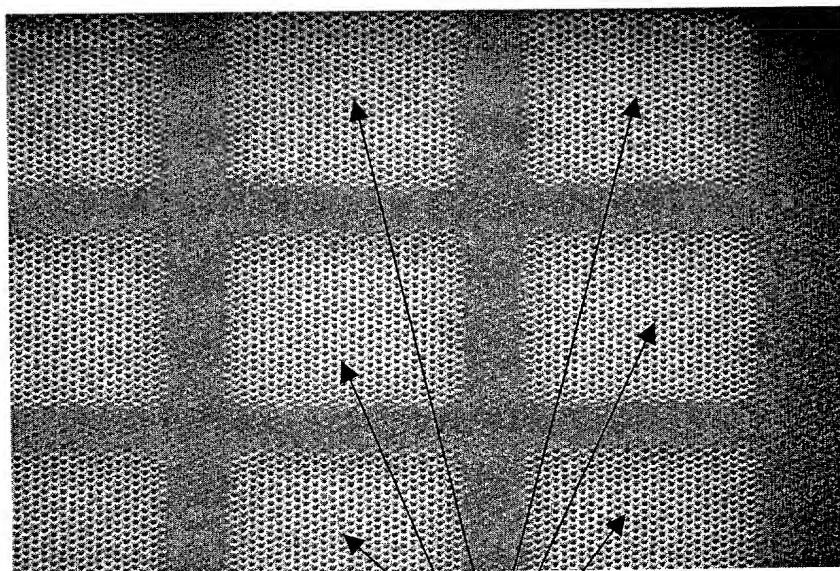


Figure 12



Separate electrode grating regions

Figure 13

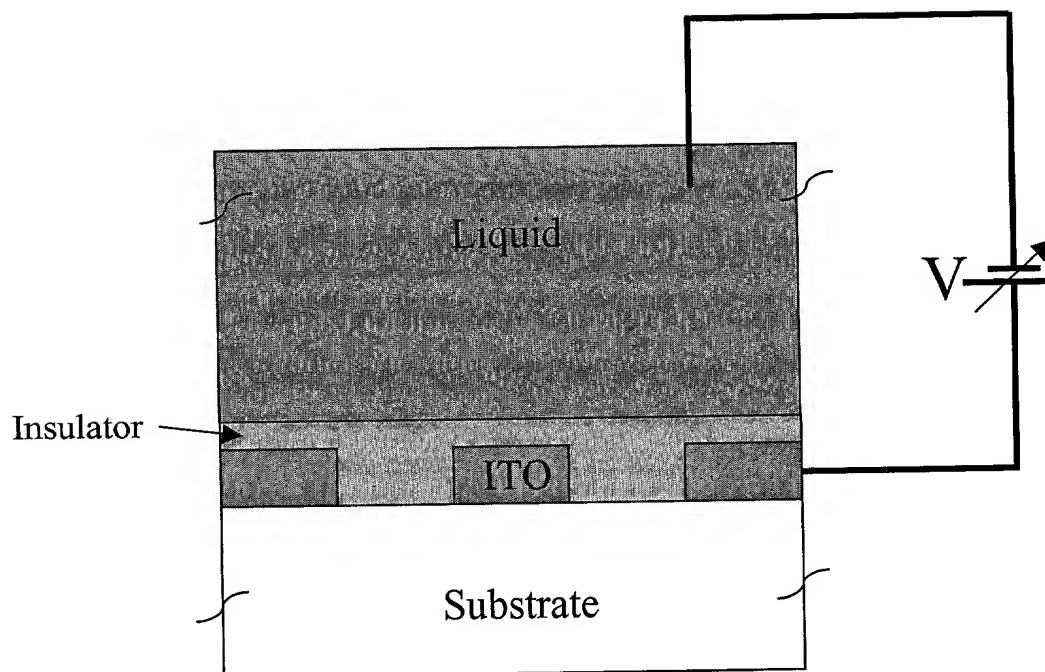


Figure 14

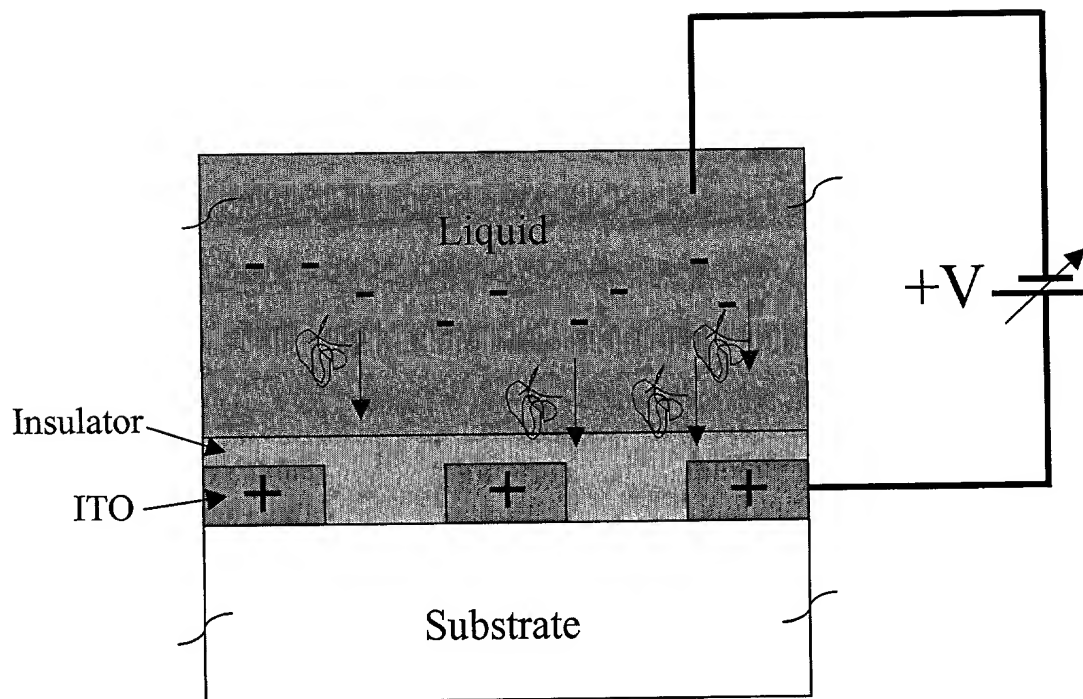


Figure 15



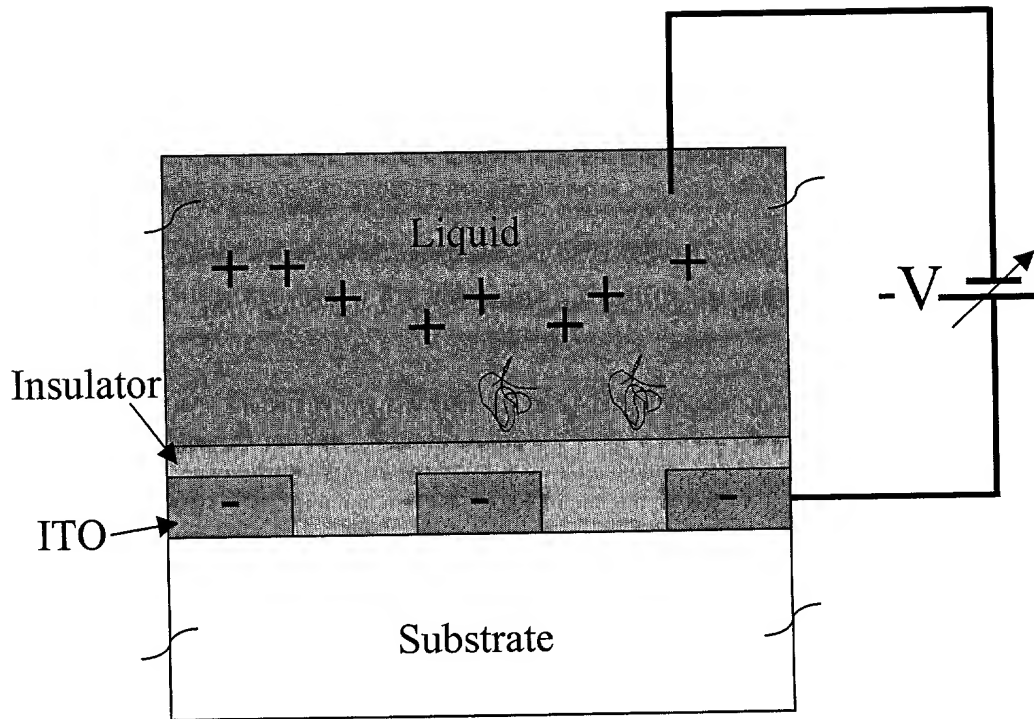


Figure 16

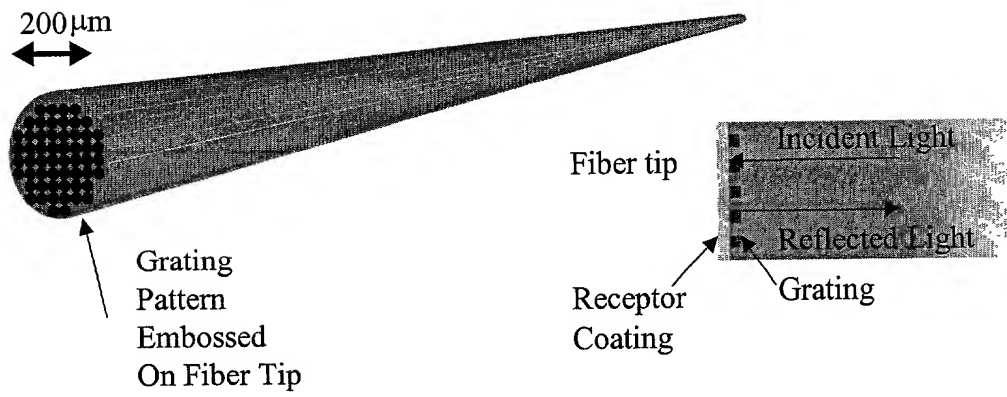


Figure 17

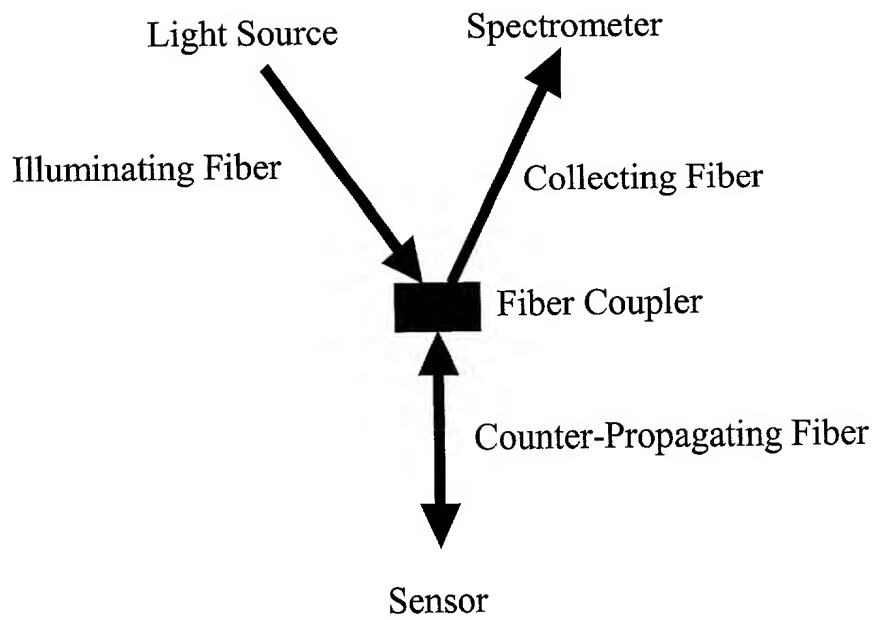


Figure 18

## Peak Wavelength

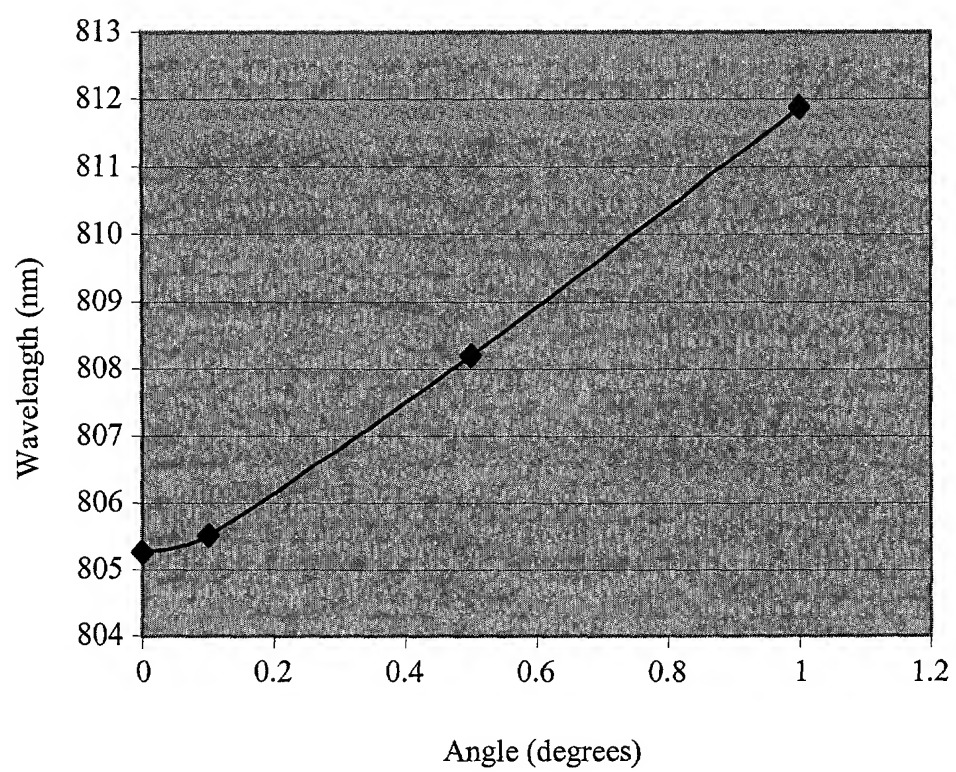


Figure 19

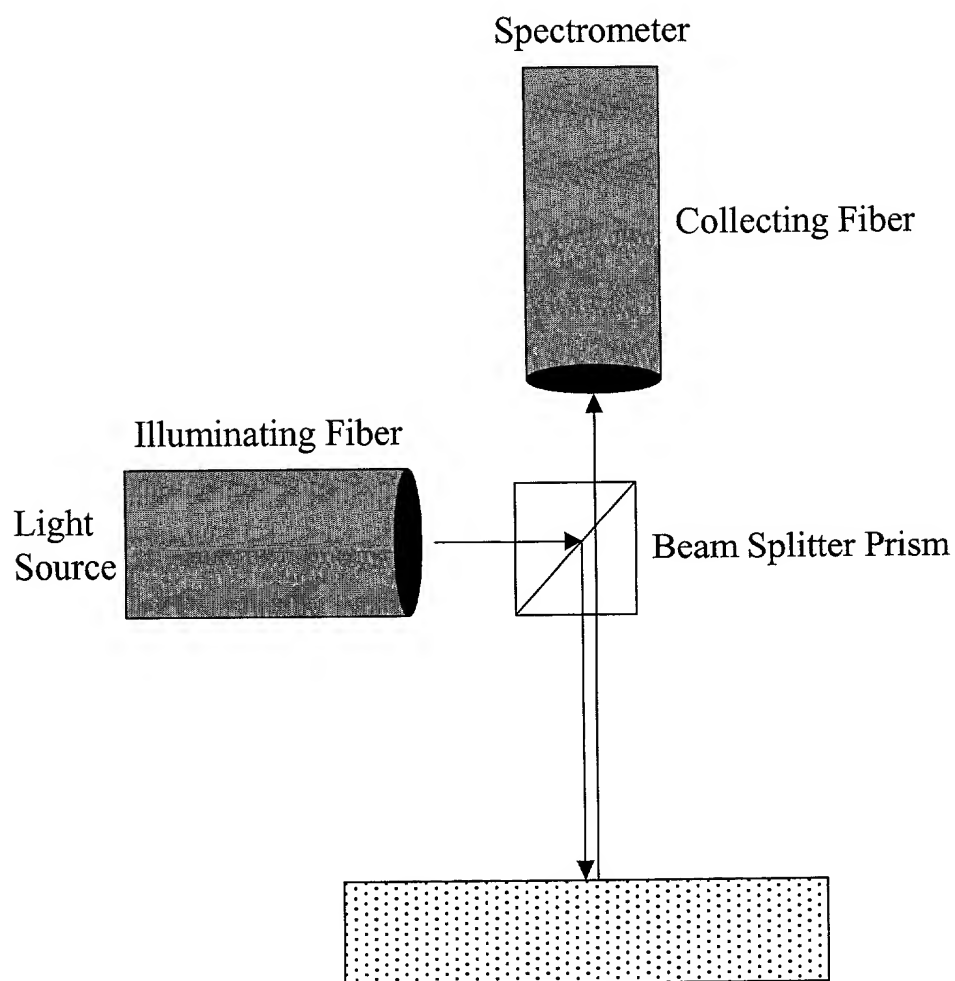


Figure 20

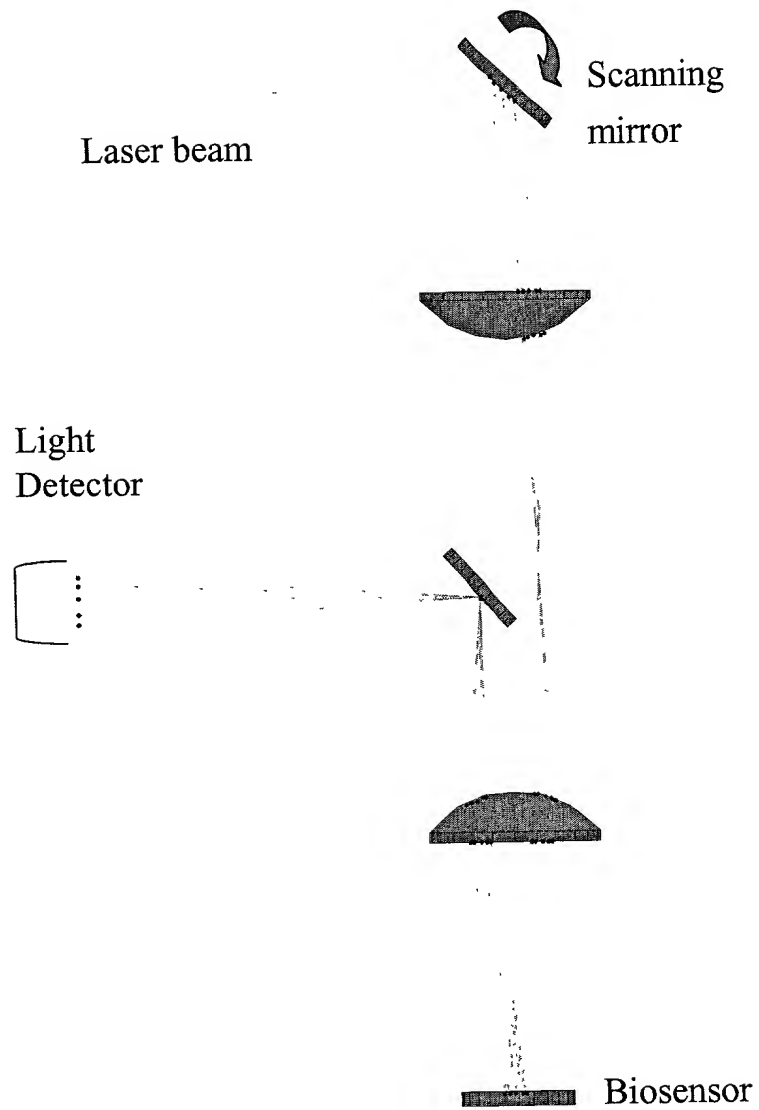


Figure 21

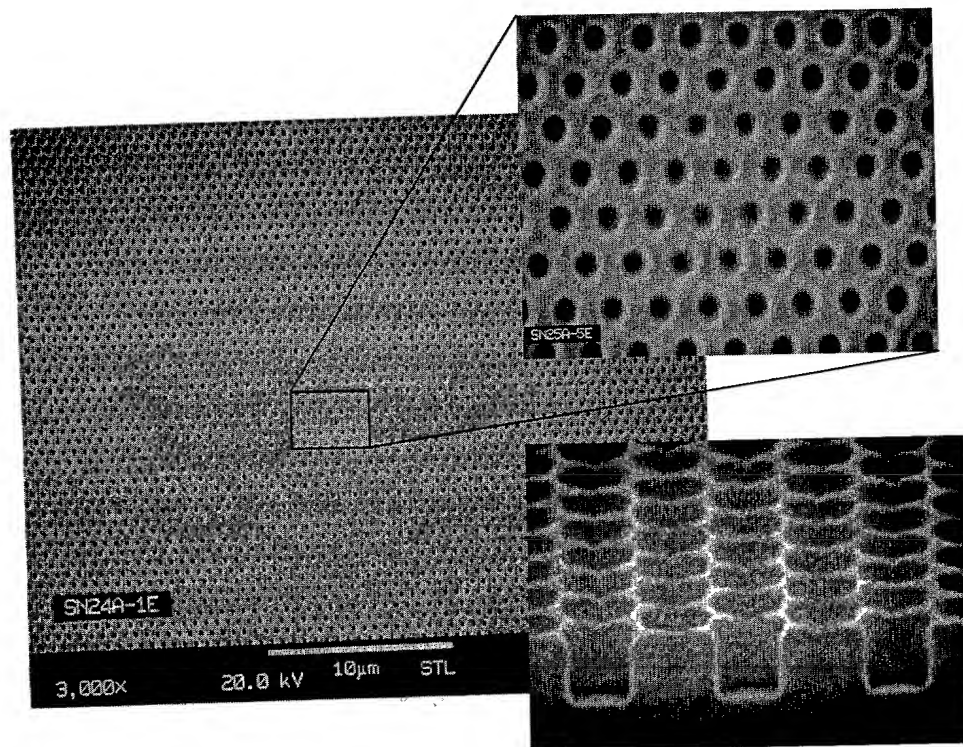


Figure 22

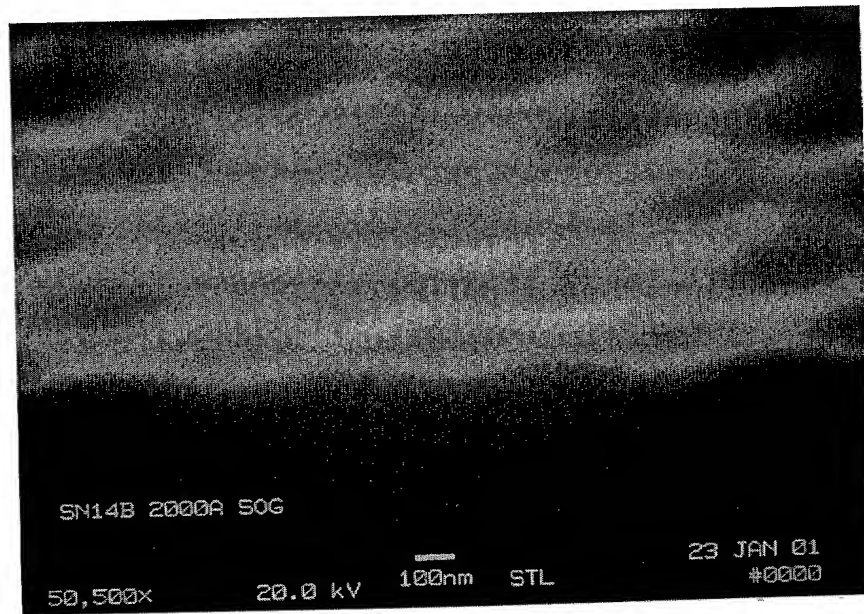


Figure 23



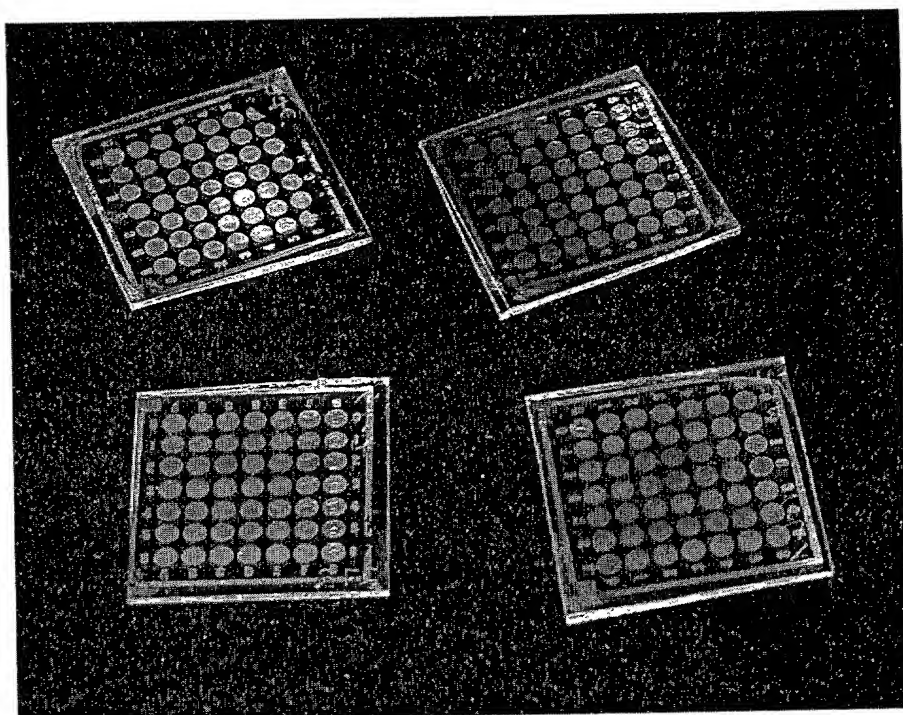


Figure 24

## Albumin Deposition on Resonant Reflector

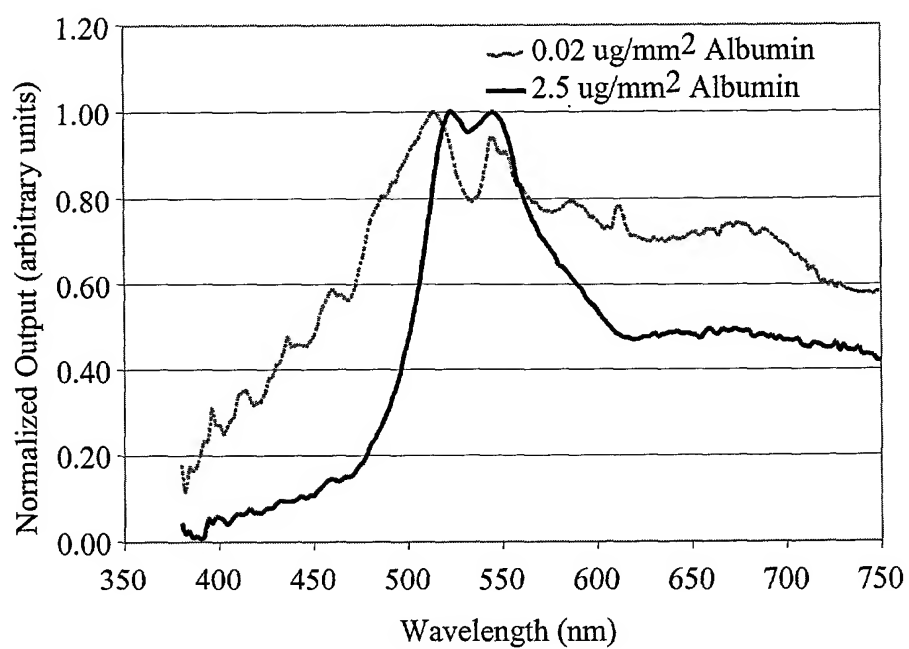


Figure 25

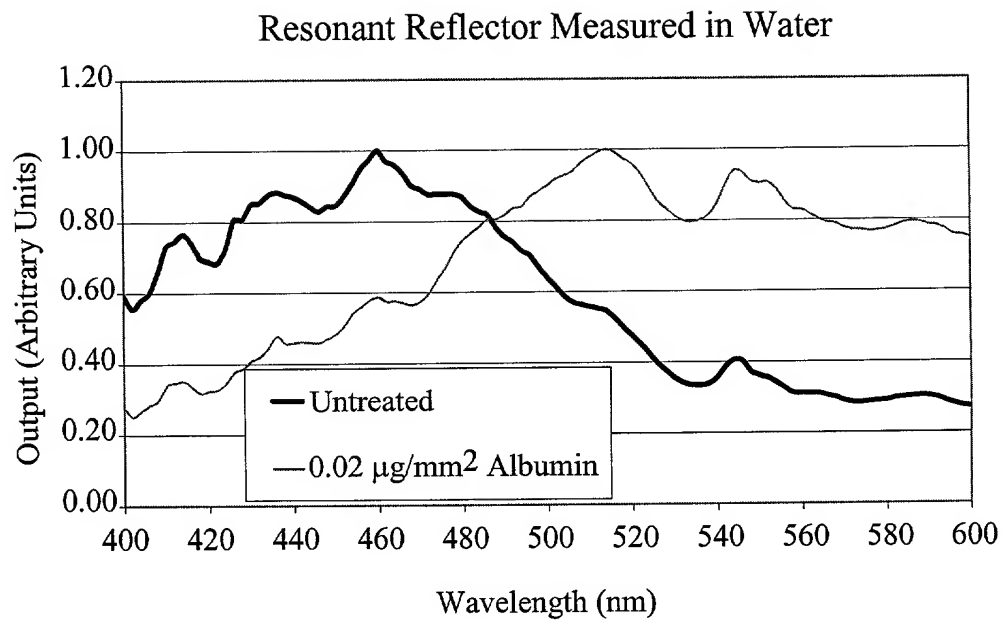


Figure 26

## Bacteria immobilization on structure

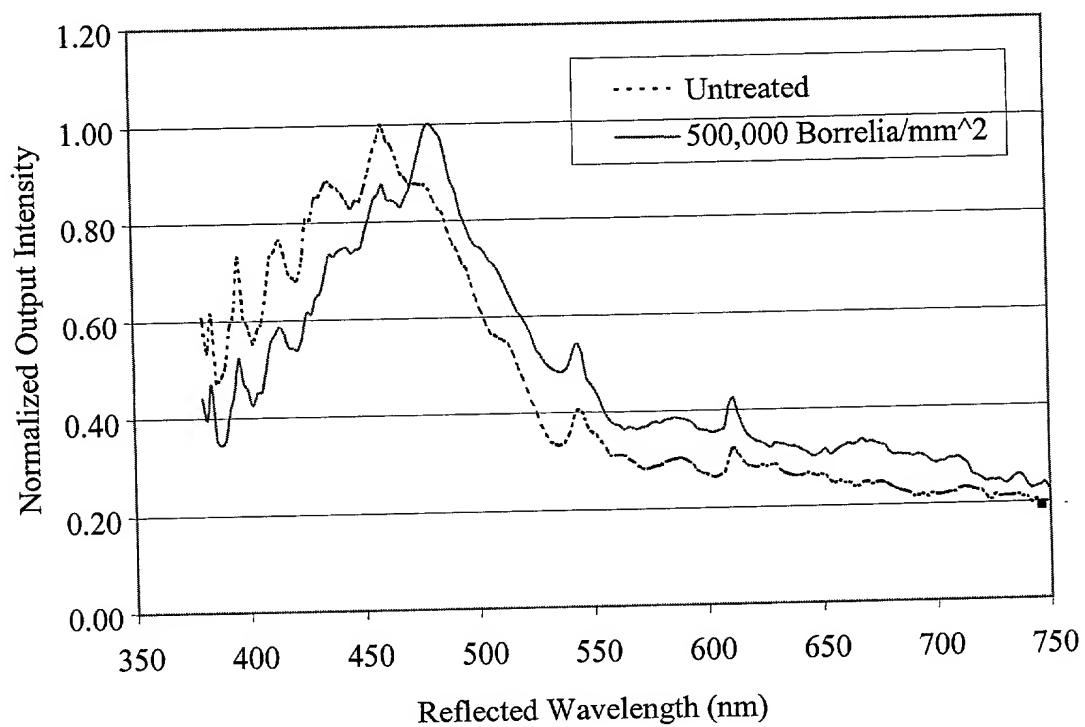


Figure 27

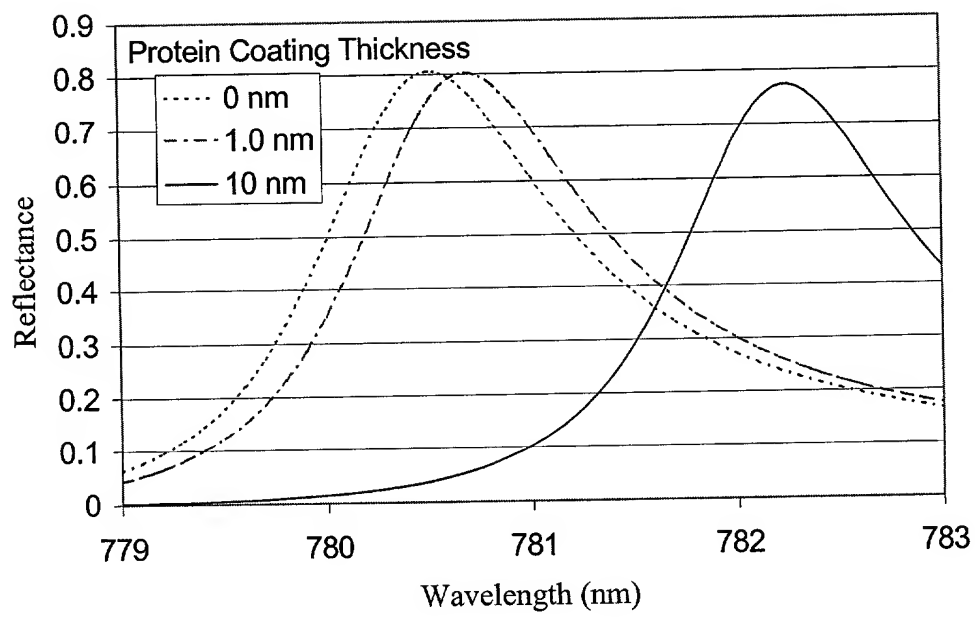


Figure 28

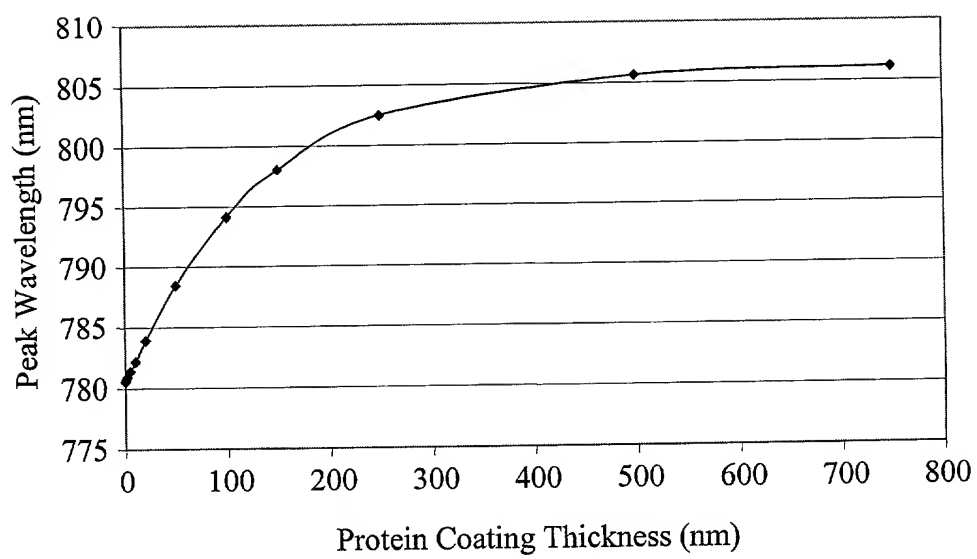


Figure 29

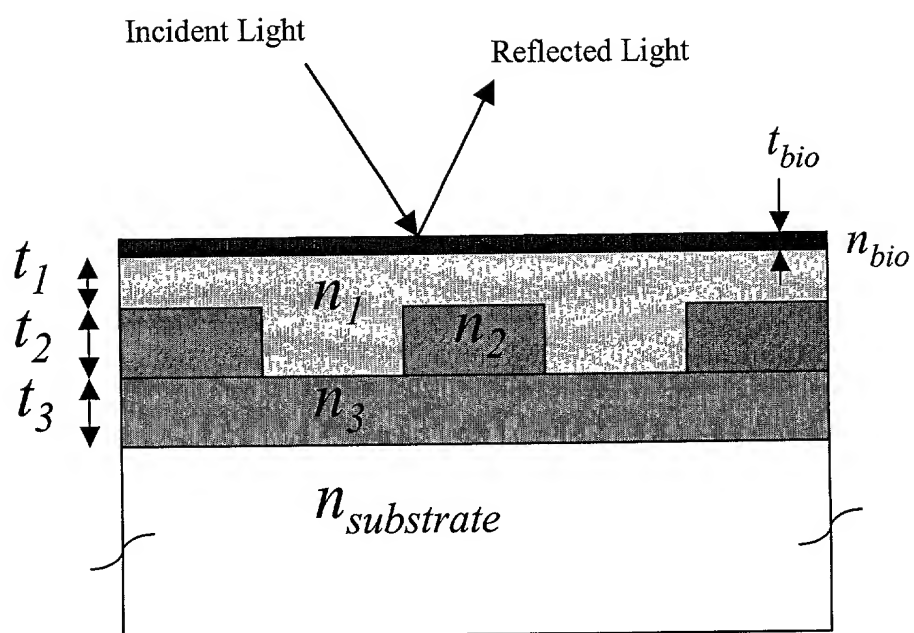


Figure 30

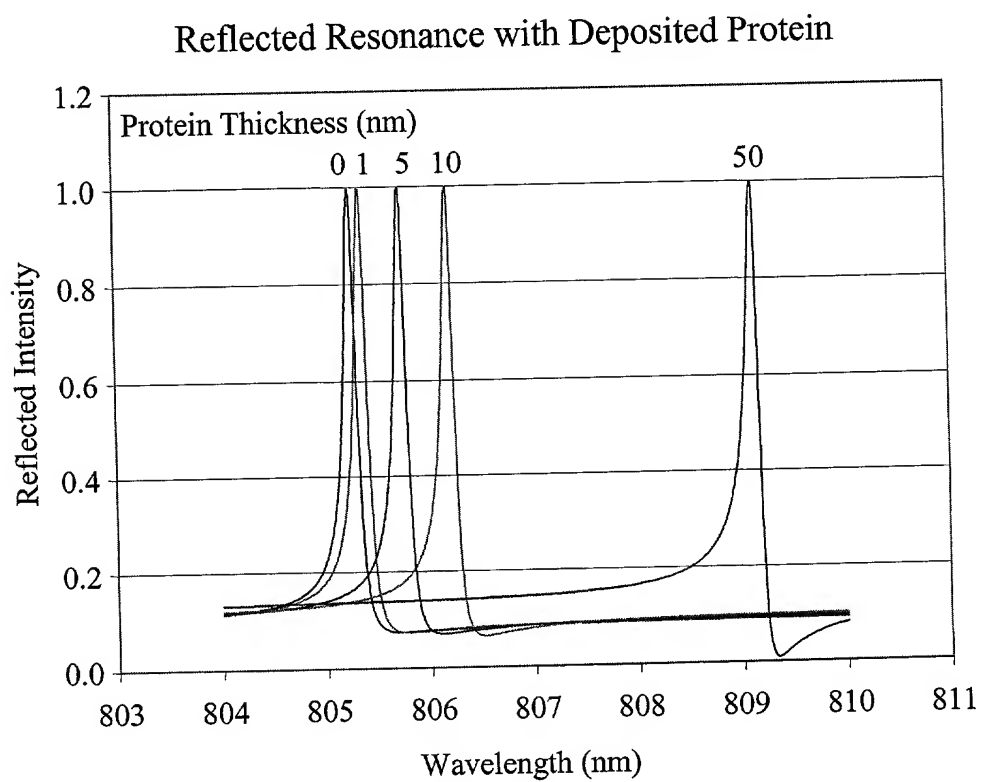


Figure 31



Resonant Peak Wavelength Dependence  
on Deposited Protein Thickness

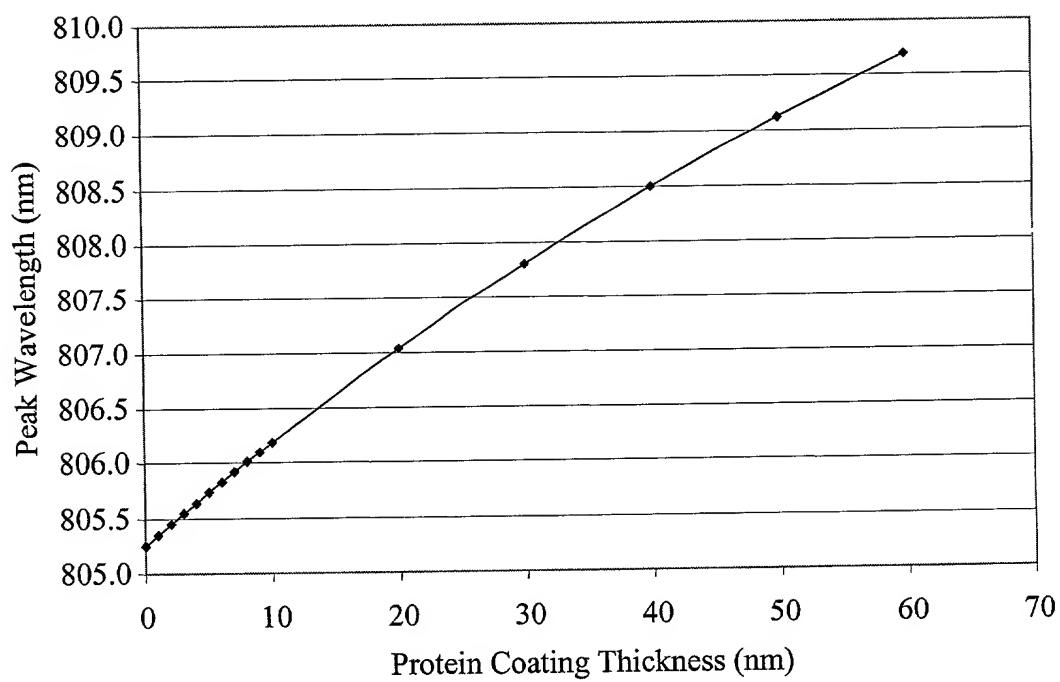


Figure 32

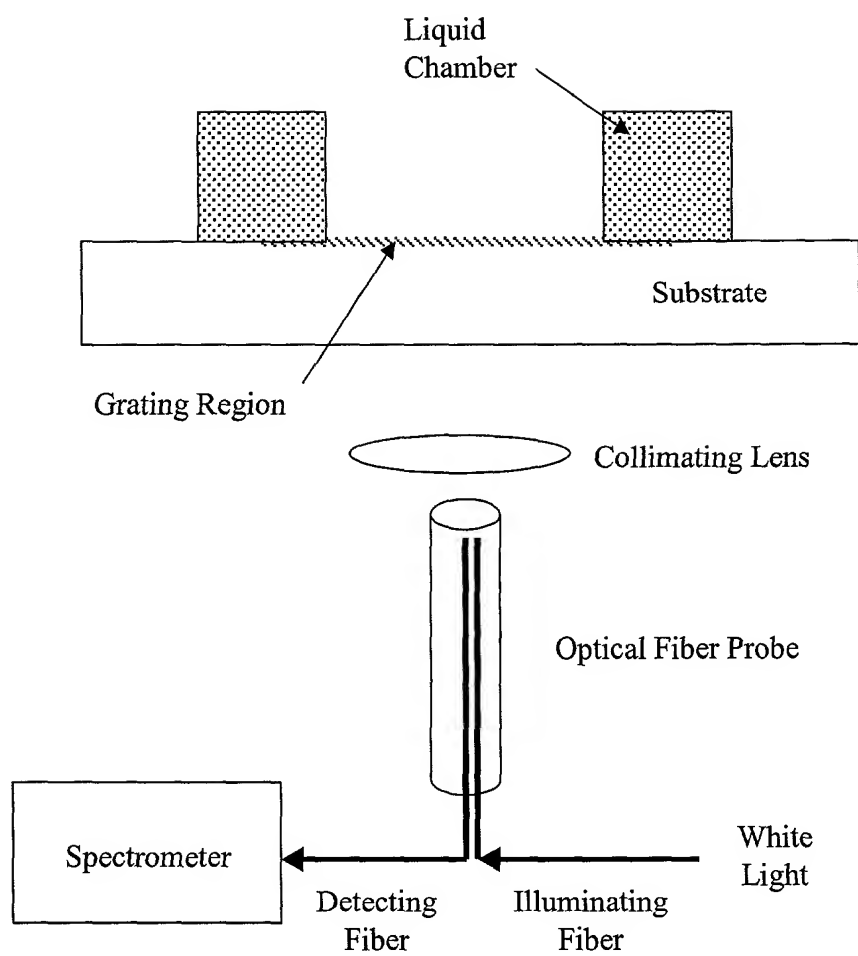


Figure 33

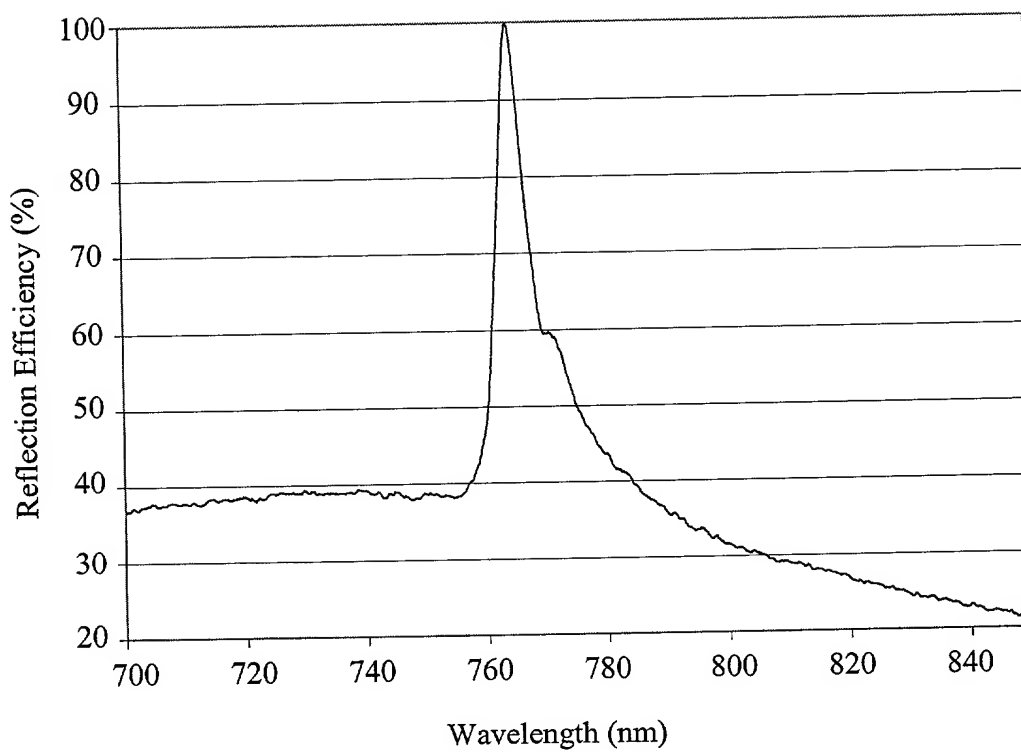


Figure 34

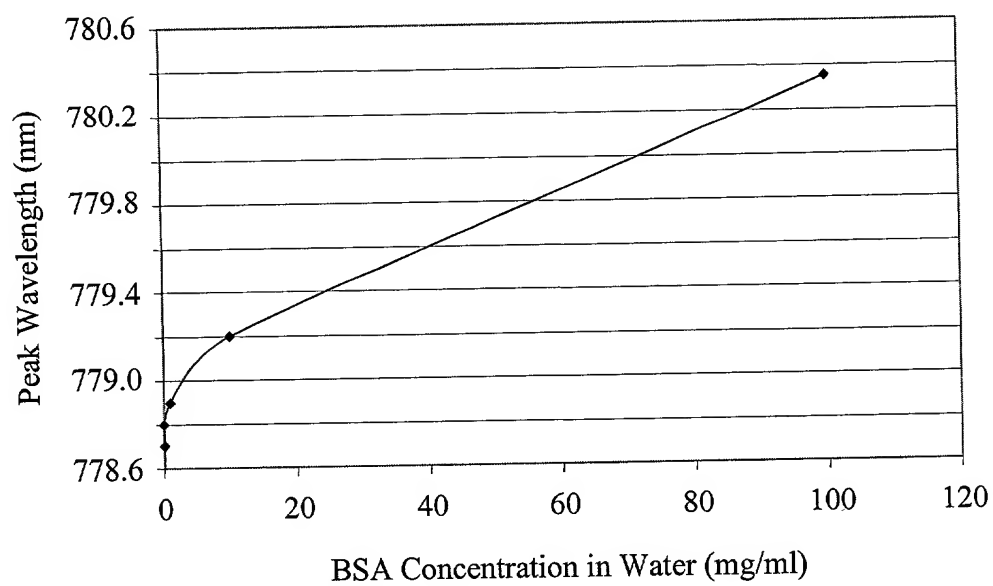


Figure 35

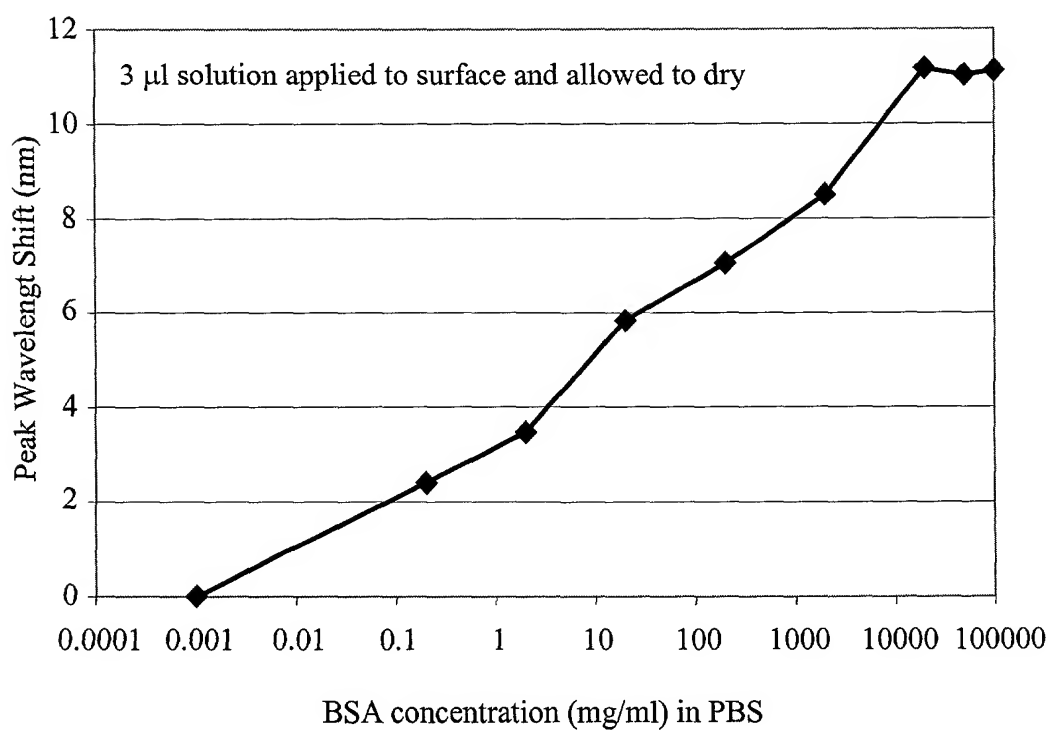


Figure 36

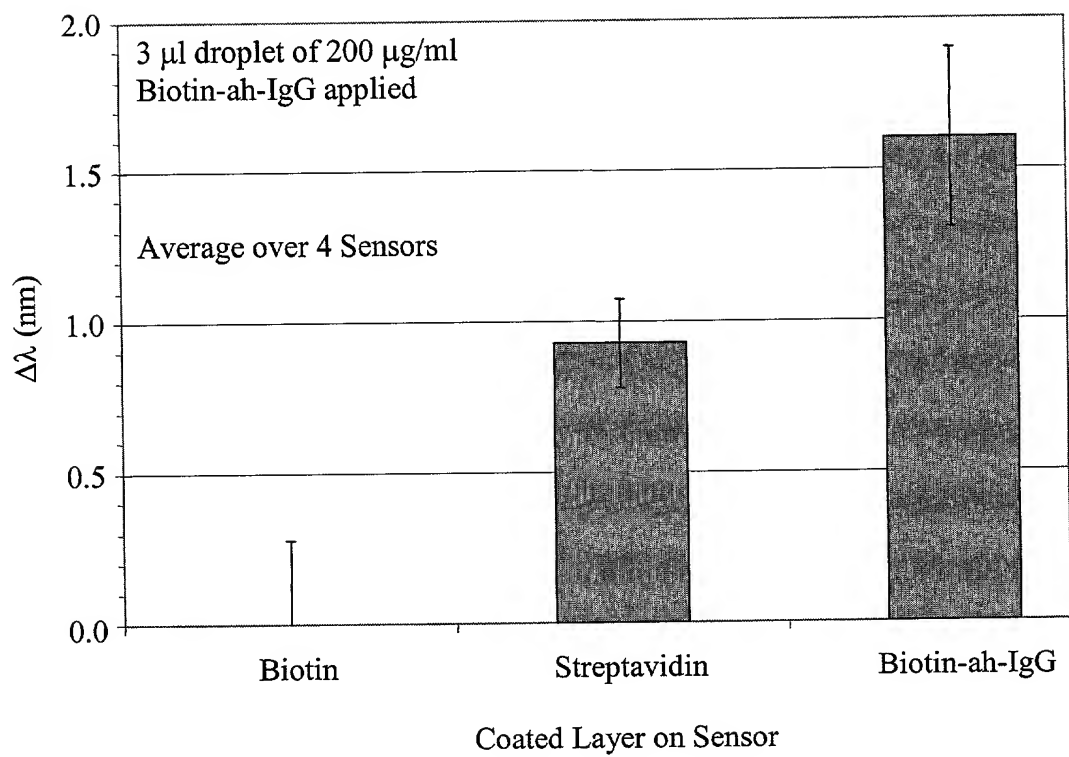


Figure 37A

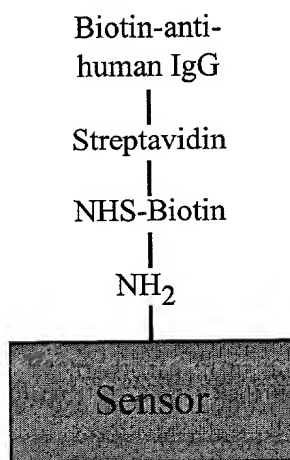


Figure 37B

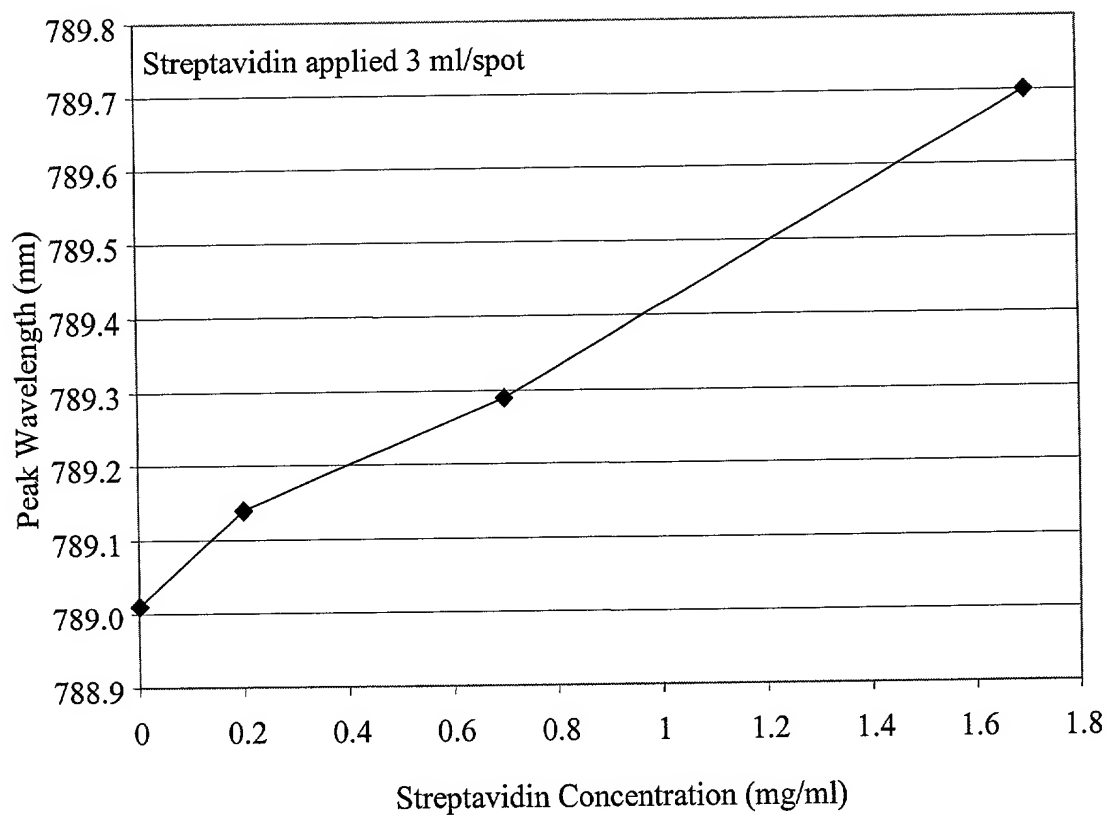


Figure 38A

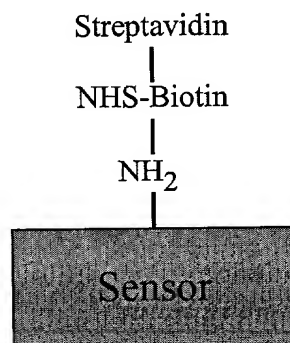


Figure 38B

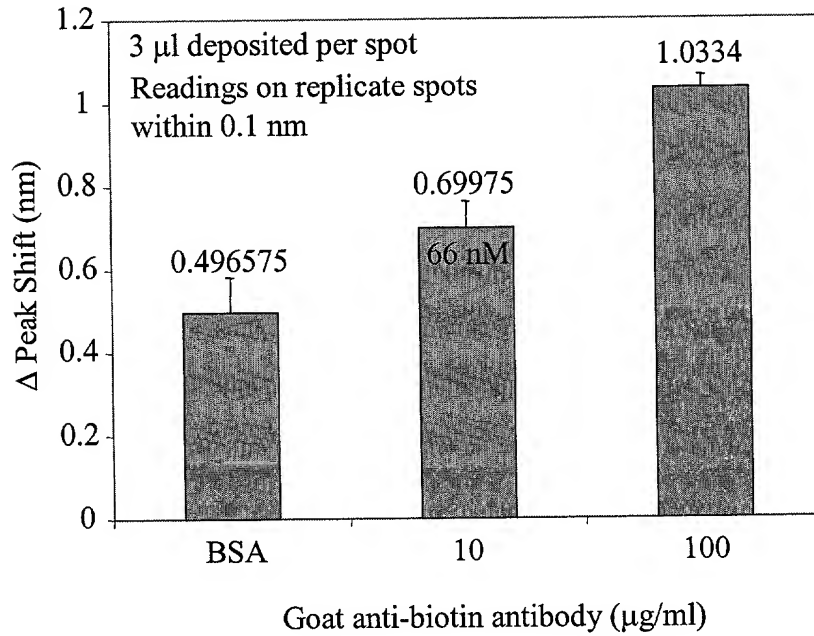


Figure 39A

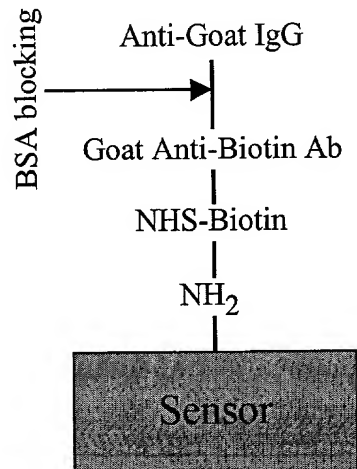


Figure 39B



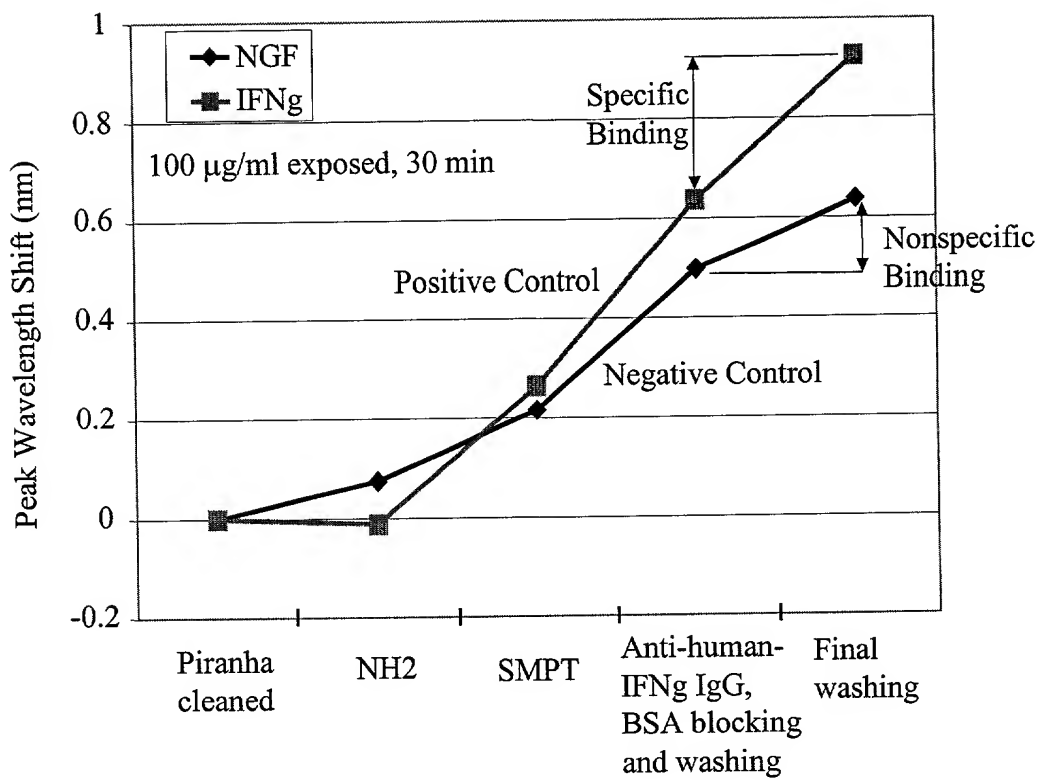


Figure 40A

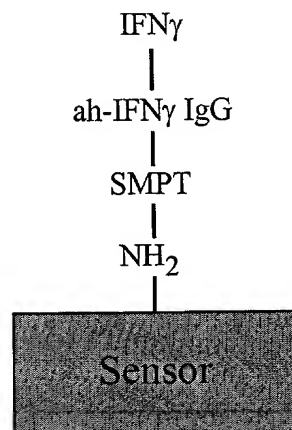


Figure 40B

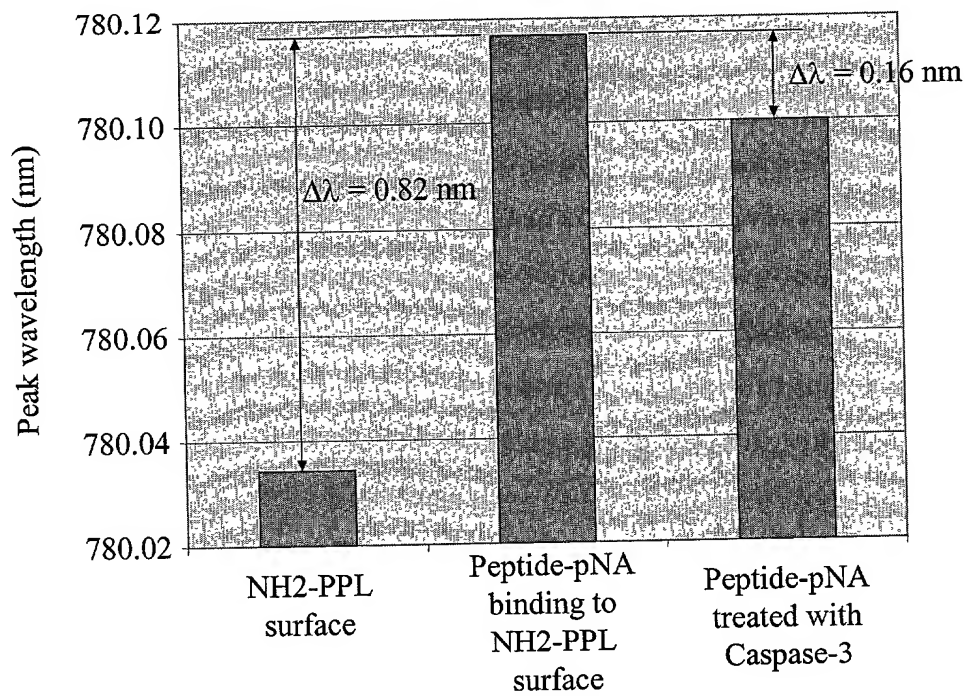


Figure 41A

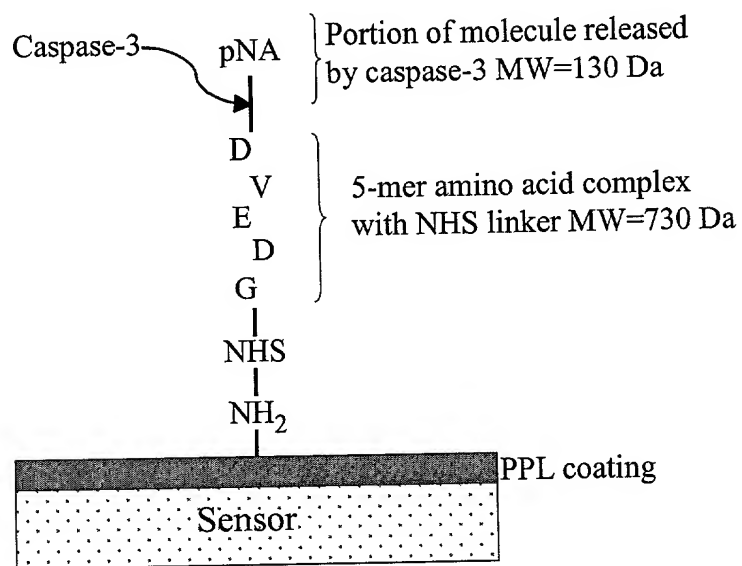


Figure 41B

Measured shifting of the resonant wavelength caused by the binding of various biomolecular layers.

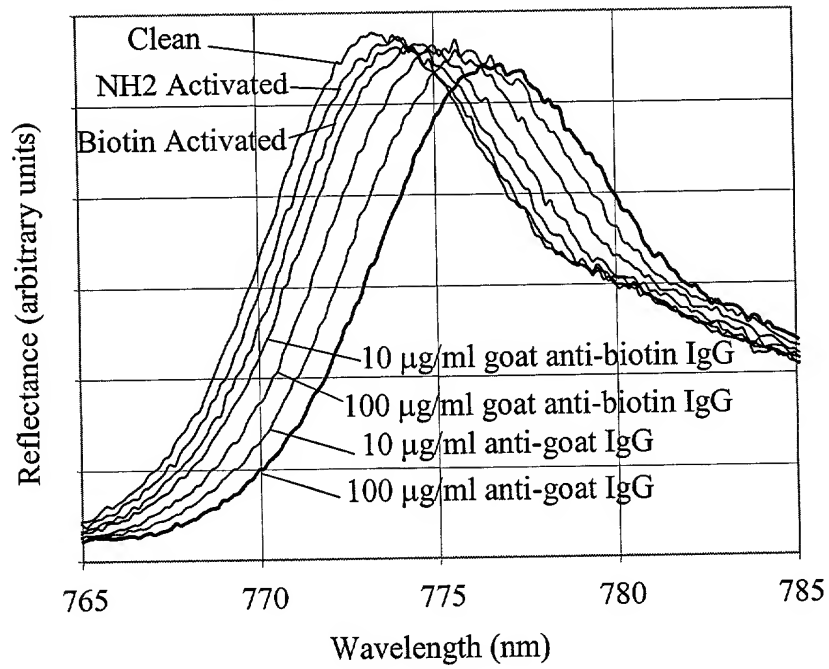


Figure 42A

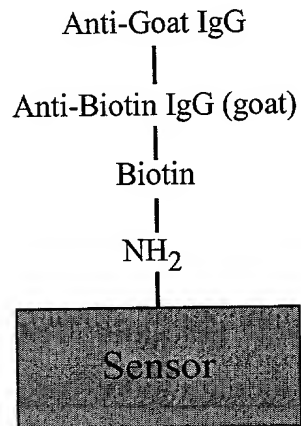


Figure 42B

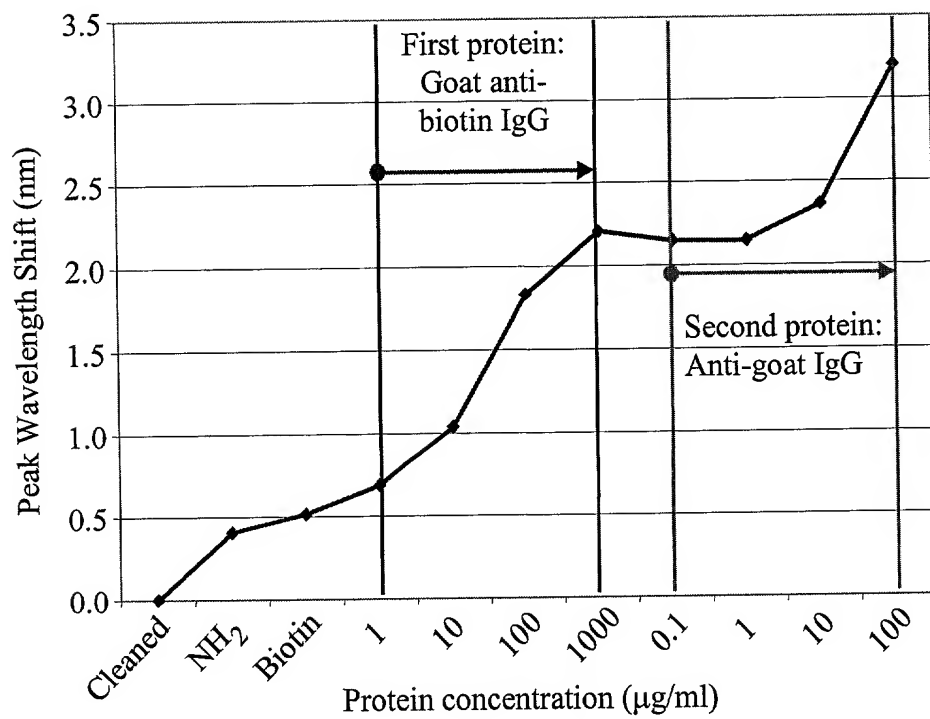


Figure 43A

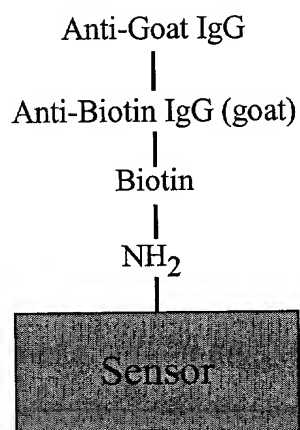


Figure 43B

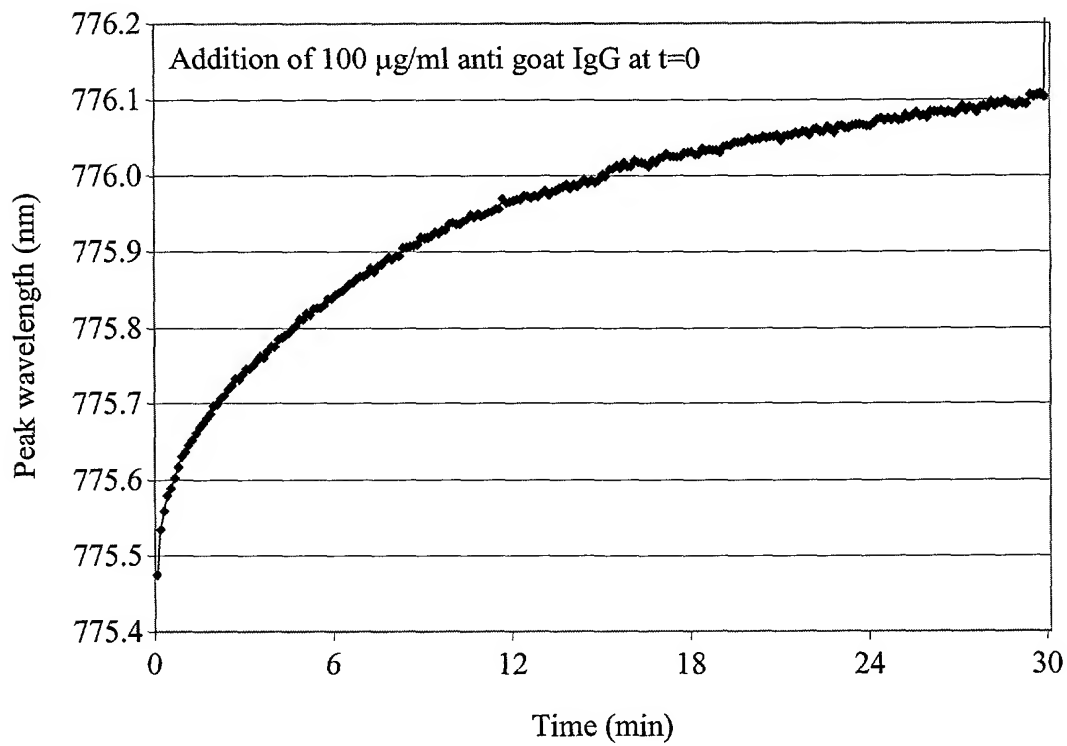


Figure 44A

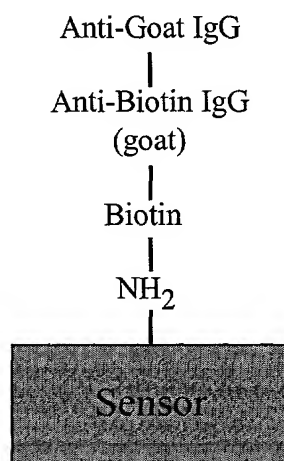


Figure 44B

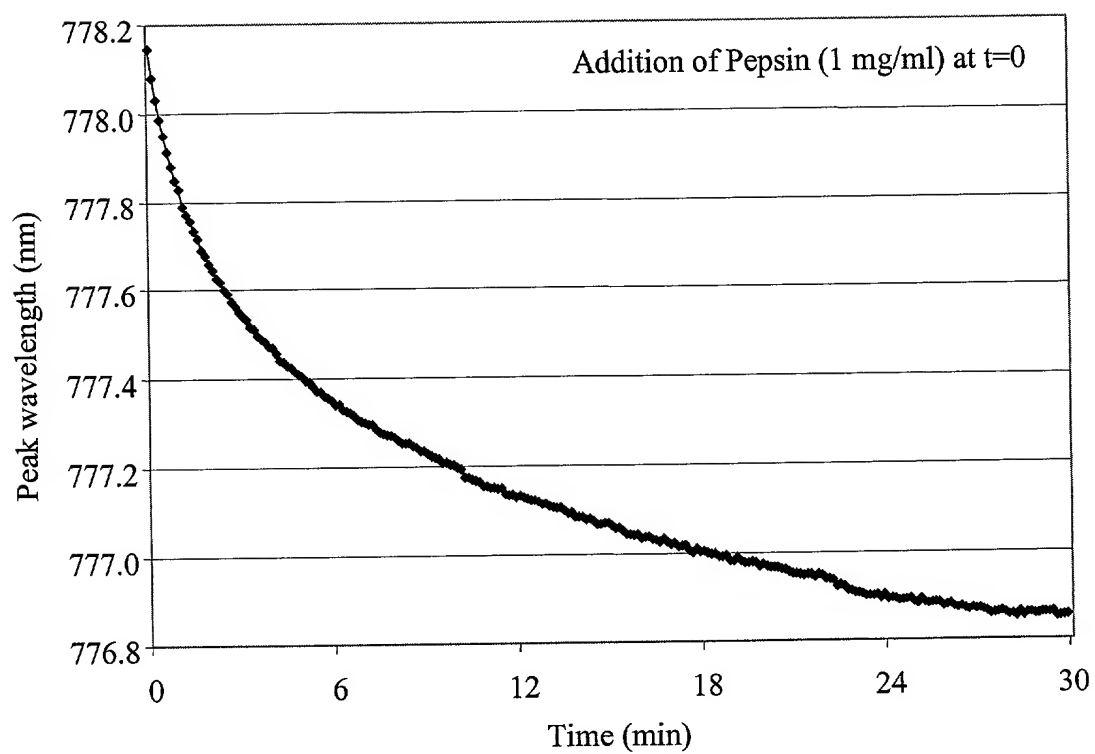


Figure 45A

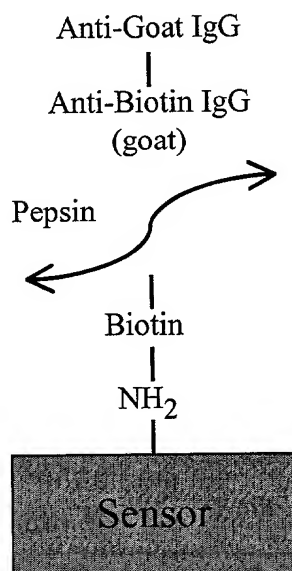


Figure 45B

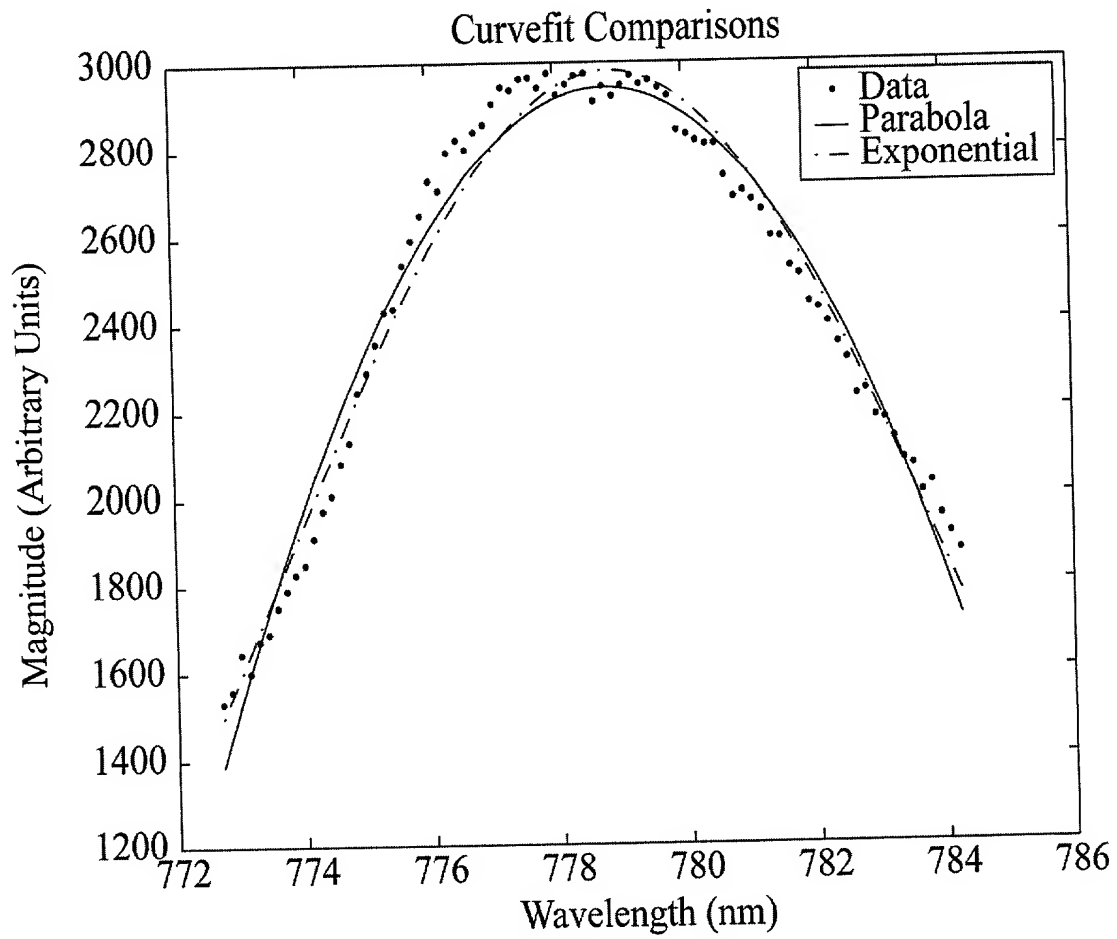


Figure 46

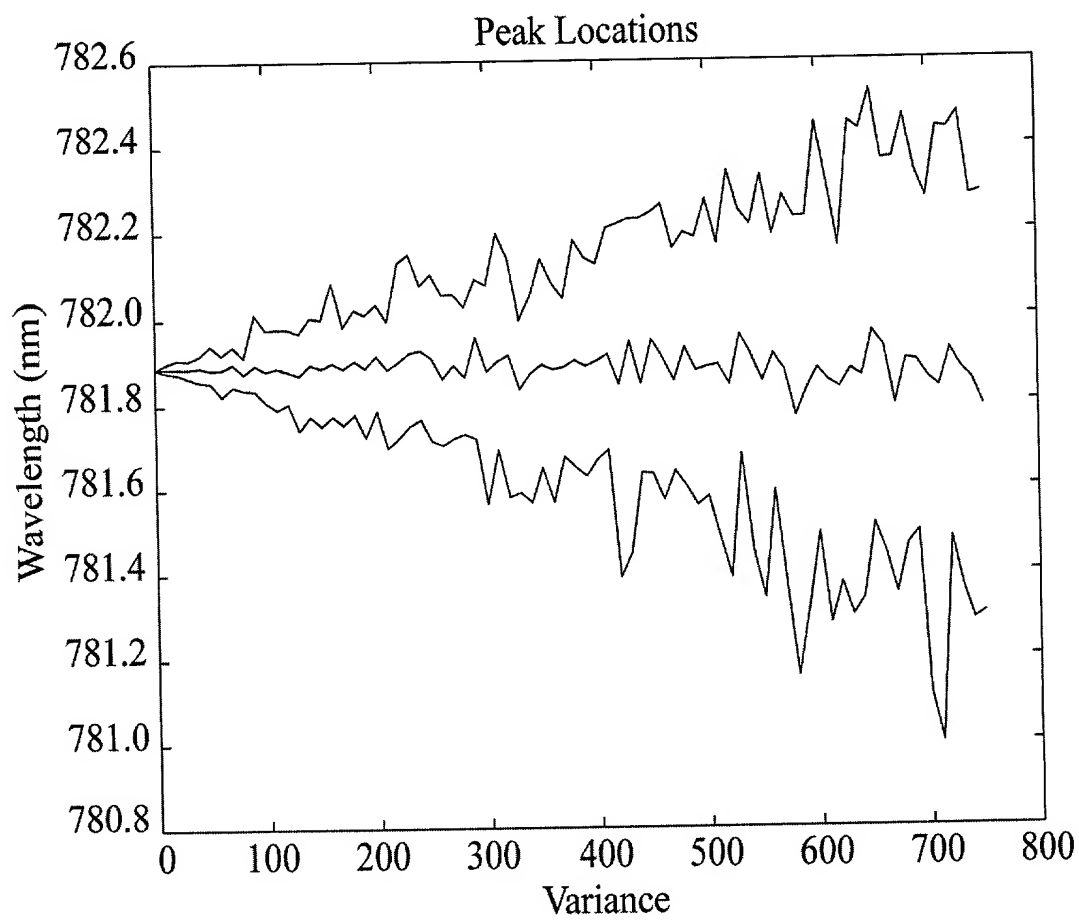
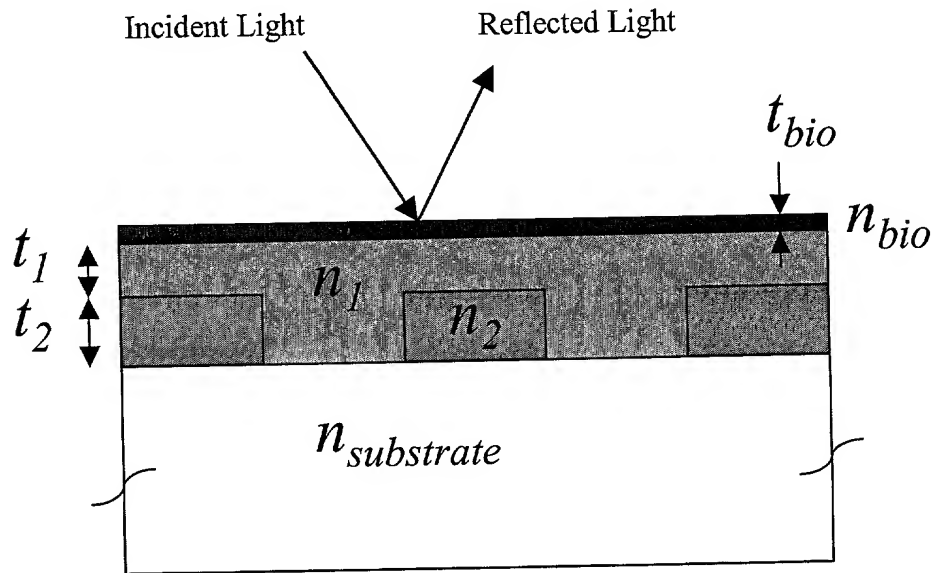


Figure 47





Material 1 = Electrical Insulator (photoresist, epoxy, glass)  
 Material 2 = Indium tin oxide conductor  
 Substrate = Glass

Figure 48

## Concentric Circle Design

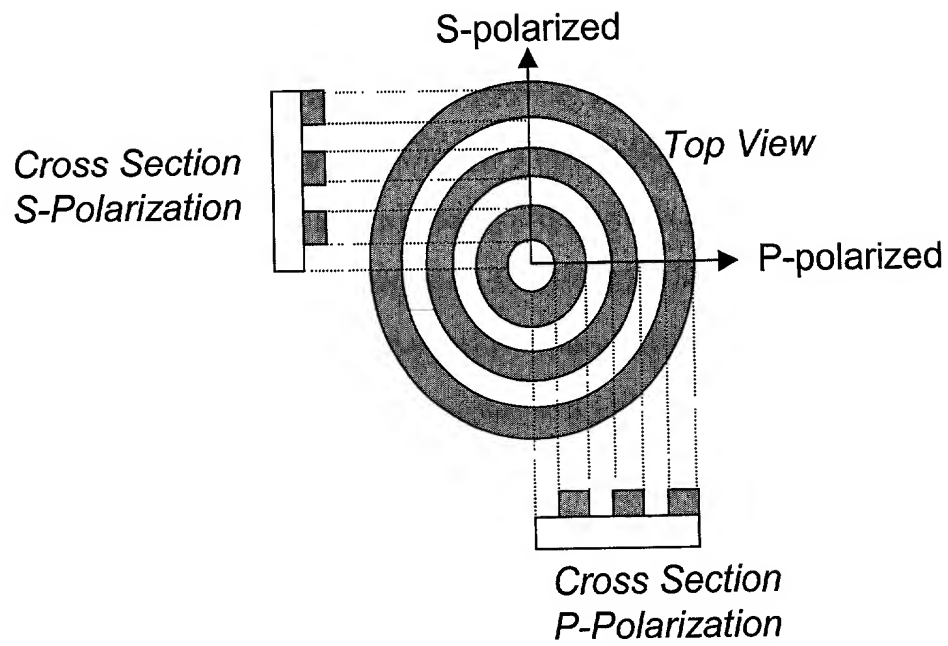


Figure 49

# Hexagonal Grid Design

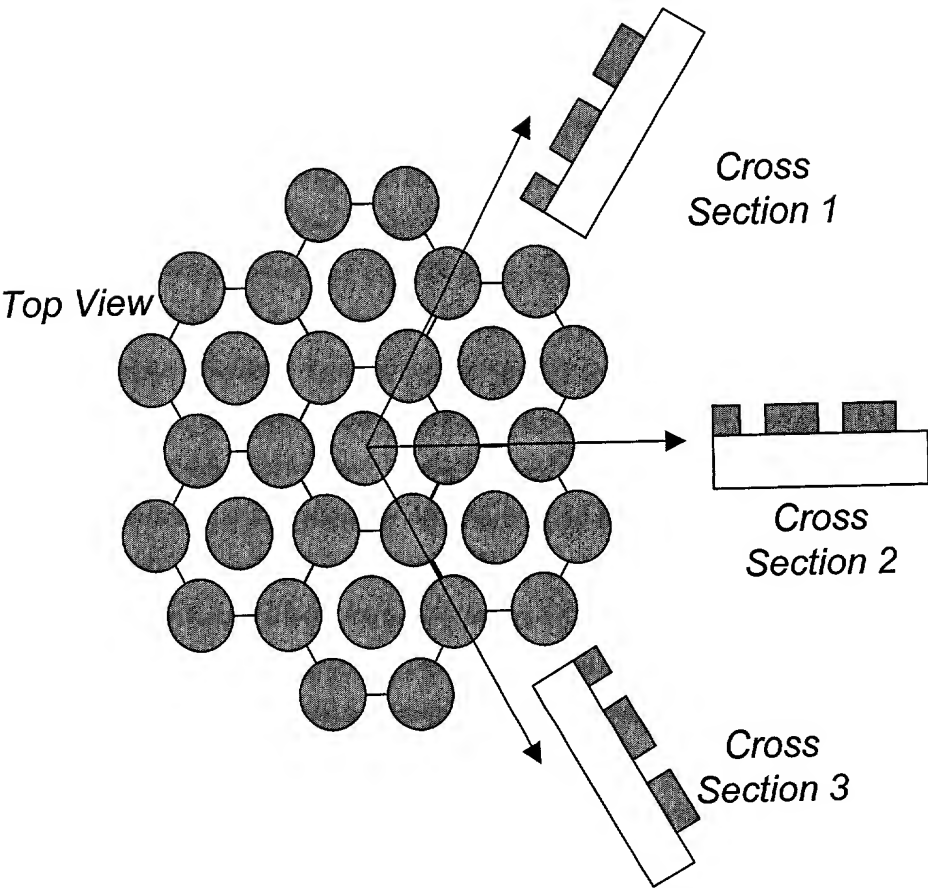


Figure 50

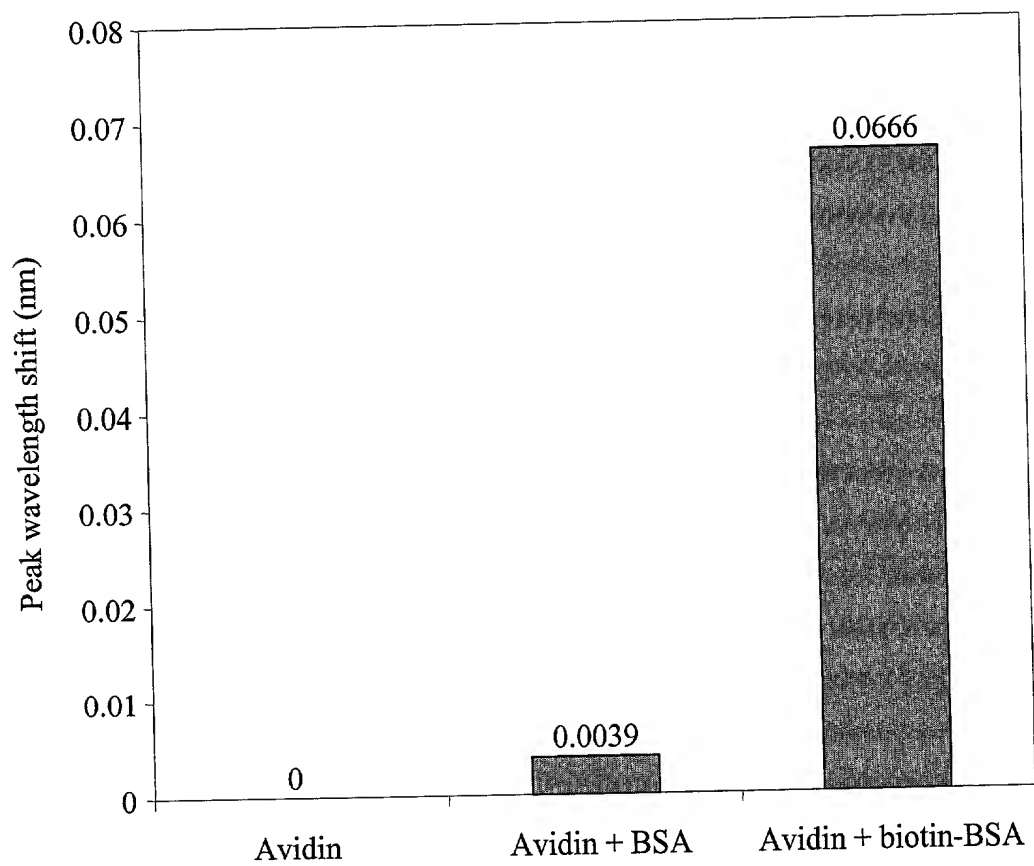


Figure 51

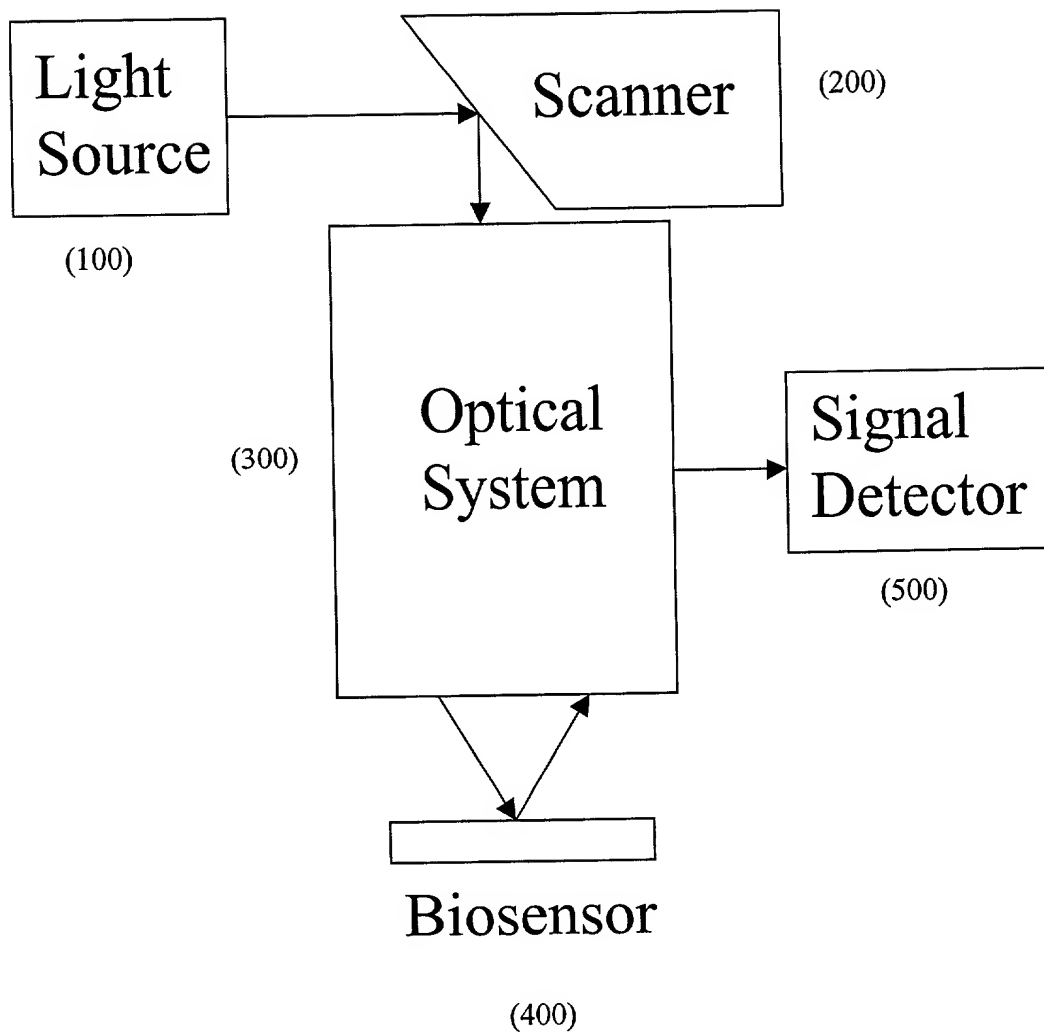


Figure 52